

ATTORNEY EYES' ONLY

**IN THE UNITED STATES DISTRICT COURT  
FOR THE CENTRAL DISTRICT OF CALIFORNIA**

BERNADINE GRIFFITH, et al.,  
individually and on behalf of all  
others similarly situated,

Plaintiffs,

v.

TIKTOK, INC., a corporation;  
BYTEDANCE, INC., a corporation,

Defendants.

Case No. 5:23-cv-00964-SB-E

**EXPERT REPORT OF RUSSELL W. MANGUM III, PH.D.**

**September 20, 2024**

ATTORNEY EYES' ONLY

**Table of Contents**

I. EXECUTIVE SUMMARY.....	1
I.A. Assignment .....	1
I.B. Qualifications .....	2
I.C. Documents Reviewed .....	3
I.D. Summary of Conclusions.....	4
II. BACKGROUND .....	5
II.A. Summary of Allegations .....	5
II.B. Plaintiffs.....	6
II.B.1. Bernadine Griffith.....	7
II.B.2. Patricia Shih.....	7
II.B.3. Jacob Watters .....	8
II.C. Defendants and the Technology At-Issue .....	8
II.C.1. ByteDance and TikTok .....	8
II.C.2. TikTok Pixel .....	9
II.C.3. TikTok Events API.....	9
II.D. Consumer Personal Information Data as a Source of Value.....	10
III. ANALYSIS FRAMEWORK .....	12
IV. UNJUST ENRICHMENT .....	13
IV.A. TikTok’s Documents Demonstrate It Derives Value from Using Non-TikTok User Data .....	14
IV.B. Defendants Revenues from the TikTok Pixel and Events API .....	16
IV.B.1. Revenue Data Available.....	17
IV.B.2. Revenues for the Relevant Period .....	24
IV.B.3. Example Calculation of the Costs, Profits, and Apportionment Related to TikTok’s Unjust Enrichment Related to Defendants Revenues.....	27
V. RESTITUTIONARY DAMAGES.....	28
V.A. Companies Charge Premiums for Products When Collection and/or Use of User Data is Restricted .....	29
V.A.1. AT&T and “GigaPower” .....	30
V.A.2. Meta’s “Pay or Okay” Monetization Approach in Europe .....	31
V.B. Companies Place a Market Value on Collection of User Data .....	32
V.B.1. Ipsos Screenwise and Google .....	32
V.B.2. Nielsen .....	36
V.B.3. SavvyConnect .....	37
V.B.4. Reklam .....	39

ATTORNEY EYES' ONLY

V.C. Summary of Market Measures and Finding of the Economic Value of Non-TikTok Users Data on a Per Month Basis .....	40
VI. CALCULATING THE TOTAL NUMBER OF NON-TIKTOK USERS, MONTHS OF DATA COLLECTION, AND CONSIDERATION OF UNJUST ENRICHMENT .....	44
VII. ASSESSMENT OF STATUTORY DAMAGES .....	47
VIII. ECONOMIC DAMAGES FOR PLAINTIFFS .....	48
VIII.A. Economic Damages for Bernadine Griffith .....	48
VIII.B. Economic Damages for Patricia Shih .....	49
VIII.C. Economic Damages for Jacob Watters .....	50

ATTORNEY EYES' ONLY

## I. EXECUTIVE SUMMARY

### I.A. Assignment

1. I have been engaged by Bird, Marella, Rhow, Lincenberg, Drooks & Nessim, LLP, Glancy Prongay & Murray LLP, and Susman Godfrey LLP, counsel for Plaintiffs, to provide expert analysis, and, if necessary, expert testimony in the above listed matter pending in the United States District Court for the Central District of California, under Case No. 5:23-cv-00964-SB-E. I understand Plaintiffs Bernadine Griffith, Patricia Shih, and Jacob Watters (“Plaintiffs”) have accused TikTok, Inc. (“TikTok”) and ByteDance, Inc. (“ByteDance”) (collectively, “Defendants”) of the “unauthorized interception, collection, storing and use of non-TikTok users’ personal data whenever the non-TikTok users visit a non-TikTok website with the TikTok SDK installed.”<sup>1</sup> I have been asked to assess if there are economic damages related to the economic impact to Plaintiffs resulting from Plaintiffs’ allegations against Defendants. If I am to find there are economic damages, I have been asked to quantify them to the best of my ability given the fact discovery reviewed as of the date of this report, my professional experience, and my professional judgment in the face of uncertainty given the fact discovery available at the time this report is submitted.
2. I understand that at this stage of the legal proceedings, the Court has issued a ruling denying class certification.<sup>2</sup> I will proceed with my analysis focusing only on Plaintiffs. However, the economic arguments I make are also applicable to the classes proposed, should the Court at a later time certify the proposed class or subclasses.
3. My analysis is conducted through an evaluation of evidence relevant to the facts of the case available at the time of submitting this report. I understand that in August and September 2024, Defendants produced an extremely large number of documents, over 2.3 million pages of discovery, amounting to over 7 times the document count and 10 times the page count of total discovery to date. Due to the extremely large size of the production, as of the date of

---

<sup>1</sup> Second Amended Class Action Complaint, Apr. 11, 2024 (“Complaint”), p. 2.

<sup>2</sup> Order Denying Motion for Class Certification [Dkt. No. 177], Sept. 9, 2024.

ATTORNEY EYES' ONLY

this report, I have not yet had the opportunity to review all the potentially relevant documents that may have been produced by the date of this report.

4. Given the ongoing nature of the case and the open status of discovery, if additional information becomes available, I may update, modify, and/or supplement my analyses and opinions as appropriate. I may also modify or supplement my opinions in view of opinions or arguments made by any person Defendants retain, including their counsel and anyone they engage to provide opinions.
5. I understand from counsel that the Relevant Period is from March 2022 through the date of this report (September 20, 2024).
6. As noted above and discussed more fully below, the allegations I have been asked to address relate to Defendants' unauthorized use and economic gains related to its gathering and/or use of Plaintiffs' private and personal information.
7. For the purposes of my analyses, I have been asked to assume Defendants are liable.

**I.B. Qualifications**

8. I am the Executive Vice President of Cirque Analytics, an economic consulting firm established in 2021 with offices in Irvine, California, Los Angeles, California, Jackson Hole, Wyoming, and Washington DC. Cirque Analytics provides economic, financial, and statistical research and analysis to private and public sector clients in the United States and abroad. I also was a Professor at Concordia University Irvine, School of Business and Economics, from 2013 to 2022.
9. I hold a Ph.D. and a M.A. in economics from the University of Southern California, and a BA in economics, with honors, from California State University, Fullerton. I have been actively employed in the area of economic analysis for over 25 years. After completing my graduate education, I served as an economist with the US Federal Trade Commission, Bureau of Economics, from July 1995 through August 1998. After leaving the Commission, I held positions as an economist and expert for Nathan Associates, PricewaterhouseCoopers,

ATTORNEY EYES' ONLY

and Analysis Group. In 2021, I joined Cirque Analytics. I have been a professor and taught courses at Johns Hopkins University, The University of Southern California, Pepperdine University, and Concordia University Irvine, where I retired in 2022. I also served as a Visiting Researcher at the University of Winchester, UK, in the Faculty of Business, Law and Digital Technology.

10. I am or have been a member of several professional associations, including the American Economic Association, the Orange County Intellectual Property Law Association, the Los Angeles Intellectual Property Law Association, the American Bar Association, and the Licensing Executives Society, for which I previously served as the Chair of the Orange County Chapter. I have written articles and given presentations on various aspects of economic damages.
11. I have often analyzed issues related to various economic matters, including economic impact and commercial damages. I have analyzed such claims and damages in many different industries, such as electronics, software, semiconductors, telecommunications, oil refining, agriculture, medical instruments, music and entertainment, apparel, and various consumer goods. I have been qualified as an expert in both state and federal courts and have analyzed and provided opinions regarding economic impacts in many cases, for both plaintiffs and defendants.
12. Cirque Analytics charges \$870 per hour for my work in this matter. Professional staff members employed by Cirque Analytics also assist me. Neither my compensation nor Cirque Analytics' is contingent upon the outcome of this case.
13. My curriculum vitae is attached to this report as **Appendix 1**. Also included in **Appendix 1** is a list of the matters in which I have testified at deposition or trial in the past four years, along with a list of my publications for at least the past ten years.

### **I.C. Documents Reviewed**

14. In conducting my analysis, I, or supporting staff at my direction, have reviewed various documents and materials produced in this case. Those documents include, but are not limited

ATTORNEY EYES' ONLY

to, materials produced by Defendants, Defendants' interrogatory responses, legal materials filed as part of this action, deposition testimony, publicly available materials, a conversation with Plaintiffs' technical expert Dr. Zubair Shafiq, as well as academic and legal research. The set of documents, materials, and information I considered are listed in this report or in the attached **Appendix 2**.

15. I have had full access to every document produced in this case, using a document review platform provided by Everlaw, and to all deposition transcripts, written discovery responses, and data produced. I was freely allowed to conduct searches and view any document for the purpose of preparing this report.

### **I.D. Summary of Conclusions**

16. Based on my analysis and review of the evidence and the facts of the case available to date, I have determined the following:
- The personal information that TikTok collects has economic value, as shown through payments that other companies have made to consumers for the collection and use of similar information.
  - Defendants earned U.S. revenues from the collection and/or use of Plaintiffs' and non-TikTok users' data, amounting to between approximately \$737 million to approximately \$1.049 billion over the Relevant Period (March 2022 through the date of this report).
  - From an economic standpoint, Plaintiffs were impacted, and continue to be impacted, by TikTok's unauthorized collection and/or use of data, in at least the following ways:
    - i. Defendants obtained, and continue to obtain, valuable Plaintiffs data without Plaintiffs being compensated for the collection and/or use of that data.
    - ii. The economic value associated with each Plaintiff's data subject to Defendants' unauthorized collection and/or use may be quantified based on publicly available data that can be used to determine a market value. I find that the economic value of a Plaintiff's data is valued at up to \$3 per Plaintiff per month.

ATTORNEY EYES' ONLY

iii. Application of the model for Plaintiffs yields damages of \$93 for each Plaintiff utilizing a restitutionary damages approach, and an estimate of \$10.24 for each Plaintiff as a pro rata share of unjust enrichment.

17. The conclusions in this report are preliminary given the ongoing nature of the case and the open status of discovery. I reserve the right to update, modify, and/or supplement my analyses and opinions if additional information becomes available, and in view of opinions or arguments made by any person Defendants retain, including their counsel and/or anyone they engage to provide opinions.

## II. BACKGROUND

### II.A. Summary of Allegations

18. TikTok states that it considers and cares about TikTok users and their privacy. [REDACTED]  
[REDACTED]  
[REDACTED] It is alleged that the same is not true for non-TikTok users.
19. Plaintiffs allege that Defendants unlawfully collect and store personal data of U.S. individuals that are not and have not registered for the TikTok application (i.e., non-TikTok users).<sup>4</sup> According to Plaintiffs, Defendants intercept and collect data while individuals browse non-TikTok websites, regardless of whether an individual is a TikTok user.<sup>5</sup> Defendants collect these data through the TikTok Pixel, installed on websites with no affiliation with TikTok, and through the TikTok Events API, a server-to-server data tracking mechanism similar to the Pixel.<sup>6</sup> Consistent with the Complaint, I refer to the Pixel and Events API together as the “TikTok SDK.”<sup>7</sup> In addition, Defendants collect these data from

---

<sup>3</sup> [REDACTED] (TIKTOK-BG-000002930–940 at 935).

<sup>4</sup> Complaint, pp. 2–3.

<sup>5</sup> Complaint, pp. 3–4.

<sup>6</sup> Complaint, p. 4; Declaration of Zubair Shafiq, Ph.D. in Support of Plaintiffs’ Motion for Class Certification, June 21, 2024 (“Shafiq Declaration”), Sections IV and V; Conversation with Dr. Shafiq; Expert Reply Report of Zubair Shafiq, Ph.D. In Support of Plaintiffs’ Motion for Class Certification, July 26, 2024 (“Shafiq Reply Declaration”); Expert Report of Zubair Shafiq, Ph.D., Sept. 20, 2024, (“Shafiq Report”).

<sup>7</sup> Complaint, p. 2.



ATTORNEY EYES' ONLY

websites with no disclosed relation to or affiliation with Defendants, and the websites do not disclose that data on their website visitors are collected and sent to TikTok.<sup>8</sup>

20. According to Plaintiffs, Defendants' software that enables the collection of website visitor data has been installed on hundreds of thousands of websites.<sup>9</sup> Examples of websites from which Defendants collect, or have collected, website visitor data include: Hulu, Upwork, Build-a-Bear Workshop, Rite Aid, The Vitamin Shoppe, WebMD, Weight Watchers, The Planned Parenthood Federation of America, Cerebral, Recovery Centers of America, SmartAsset, Happy Money, United Methodist Church, Girl Scouts of the USA, Maryland Department of Health, and Arizona Department of Economic Security.<sup>10</sup>
21. Examples of the types of personal data collected by Defendants include contact information (e.g., phone numbers and emails addresses), identifiers (IP addresses, user IDs, and user agents), and browsing data (e.g., webpage visits, search queries).<sup>11</sup> Additional sensitive data may also be collected, such as health-related data, including patient names, dates of birth, appointment schedules, and insurance details.<sup>12</sup>
22. Through Defendants' collection of personal data, Plaintiffs have been harmed through the unauthorized transfer and/or use of their data that has economic value.<sup>13</sup> In addition, through the collection of Plaintiffs' data, Defendants have benefited financially.<sup>14</sup> Furthermore, Plaintiffs have experienced reduced privacy.<sup>15</sup>

## II.B. Plaintiffs

23. The Second Amended Complaint asserts allegations on behalf of the Plaintiffs. I understand that none of the Plaintiffs registered for a TikTok account or signed into the TikTok app or

---

<sup>8</sup> Complaint, pp. 3 and 15.

<sup>9</sup> Complaint, p. 21. *See also* TIKTOK-BG-000002788–789.

<sup>10</sup> Complaint, pp. 24–25.

<sup>11</sup> Complaint, p. 15; Shafiq Declaration, Section V.A.; Conversation with Dr. Shafiq; Shafiq Reply Declaration; Shafiq Report.

<sup>12</sup> Complaint, p. 22.

<sup>13</sup> Complaint, pp. 31–34.

<sup>14</sup> Complaint, pp. 31–34.

<sup>15</sup> Complaint, p. 32.

ATTORNEY EYES' ONLY

web platform and yet each Plaintiff had his or her personal information collected by TikTok through the TikTok SDK without his or her permission.<sup>16</sup> In **Section VIII**, I provide additional information for the three Plaintiffs, specifically.

**II.B.1. Bernadine Griffith**

24. Bernadine Griffith resides in Riverside County, California and is concerned about protecting her privacy online, especially with regard to TikTok.<sup>17</sup> She has never had a TikTok account and was unaware of the TikTok Pixel and Events API.<sup>18</sup> Ms. Griffith has visited websites that use the TikTok Pixel or Events API such as Hulu, Rite Aid, Etsy, and Build-A-Bear within the Relevant Period.<sup>19</sup> She is a frequent user of Hulu with at least hundreds of visits to the website over the last decade.<sup>20</sup> Ms. Griffith estimated that she visited Etsy less than fifty times during the Relevant Period.<sup>21</sup> She visited Rite Aid and Build-a-Bear less frequently, but still visited each at least a few times within the Relevant Period.<sup>22</sup> Ms. Griffith has marketed her data online in the past through her participation in surveys and focus groups.<sup>23</sup>

**II.B.2. Patricia Shih**

25. Patricia Shih is a prior resident of Orange County, California, who uses Safari and Chrome. Ms. Shih has never been a registered user of TikTok or held a TikTok account.<sup>24</sup> She has visited Upwork several times a month, Etsy once or twice a month, and Hulu several times a year (without logging into her accounts) during the Relevant Period and it is her understanding that her search and other personal data have been transmitted to TikTok via

---

<sup>16</sup> Complaint, pp. 35–42.

<sup>17</sup> Complaint, p. 35.

<sup>18</sup> Deposition of Bernadine Griffith, June 26, 2024, pp. 43 and 56–57.

<sup>19</sup> Deposition of Bernadine Griffith, June 26, 2024, p. 57.

<sup>20</sup> Deposition of Bernadine Griffith, June 26, 2024, pp. 62–63. *See also* Complaint, p. 36; Declaration of Bernadine Griffith, June 21, 2024, pp. 1–2.

<sup>21</sup> Deposition of Bernadine Griffith, June 26, 2024, pp. 64–65. *See also* Complaint, p. 36; Declaration of Bernadine Griffith, June 21, 2024, p. 2.

<sup>22</sup> Deposition of Bernadine Griffith, June 26, 2024, pp. 68–70; Complaint, p. 36; Declaration of Bernadine Griffith, June 21, 2024, p. 2.

<sup>23</sup> Complaint, p. 37.

<sup>24</sup> Deposition of Patricia Shih, June 27, 2024, p. 232; Complaint, p. 37; Declaration of Patricia Shih, June 21, 2024, p. 1.

ATTORNEY EYES' ONLY

the TikTok Pixel on these sites.<sup>25</sup> She demonstrates that her personal data has value in several ways. For example, she joined several loyalty programs where she provided her phone number and/or email address, she participated in several surveys through a mobile app where she was compensated [REDACTED] and she participated in a user research study on [REDACTED] where she was compensated [REDACTED].<sup>26</sup>

### II.B.3. Jacob Watters

26. Jacob Watters is a resident of Madison County, Illinois.<sup>27</sup> Mr. Watters is a frequent user of the internet, and regularly browses social media websites such as Facebook, YouTube, Reddit, and Instagram.<sup>28</sup> He has never had a TikTok account.<sup>29</sup> During the Relevant Period, Mr. Watters used websites such as Etsy, Upwork, and Sweetwater, each of which have the TikTok Pixel installed.<sup>30</sup> He uses Etsy two to three times per year.<sup>31</sup> He visited Upwork several times during the Relevant Period, and because the TikTok Pixel is installed on the website, his private data were collected.<sup>32</sup>

## II.C. Defendants and the Technology At-Issue

### II.C.1. ByteDance and TikTok

27. ByteDance was founded in 2012 and launched a product called Douyin in September 2016.<sup>33</sup> Douyin is a mainland Chinese short video application. ByteDance acquired

---

<sup>25</sup> Deposition of Patricia Shih, June 27, 2024, pp. 37–38, 293, and 342–343; Complaint, pp. 38–39; Declaration of Patricia Shih, June 21, 2024, pp. 1–2; Plaintiff Patricia Shih's Responses to Defendant's First Set of Interrogatories (Nos. 1–12), Dec. 4, 2023, pp. 15–16.

<sup>26</sup> Deposition of Patricia Shih, June 27, 2024, pp. 336–337; Plaintiff Patricia Shih's Responses to Defendant's First Set of Interrogatories (Nos. 1–12), Dec. 4, 2023, pp. 10–11; Complaint, p. 39.

<sup>27</sup> I understand that after this lawsuit was filed, Mr. Watters married and changed his last name to "Leady." For simplicity, I will refer to Mr. Leady as Mr. Watters. Complaint, p. 41.

<sup>28</sup> Deposition of Jacob Watters, June 25, 2024, p. 35.

<sup>29</sup> Declaration of Jacob Watters, June 21, 2024, p. 1.

<sup>30</sup> Deposition of Jacob Watters, June 25, 2024, p. 52.

<sup>31</sup> Deposition of Jacob Watters, June 25, 2024, pp. 65–66.

<sup>32</sup> Complaint, p. 41.

<sup>33</sup> ByteDance, "Our Mission," accessed Mar. 6, 2024, <https://www.bytedance.com/en/>.

ATTORNEY EYES' ONLY

Musical.ly in November 2017. ByteDance has more than 150,000 employees and is a private company.<sup>34</sup>

28. TikTok Inc. publishes the TikTok platform, the international counterpart to Douyin, in the United States.<sup>35</sup> The TikTok platform was launched in 2017 and allows users to watch and post videos.<sup>36</sup>

### II.C.2. TikTok Pixel

29. My understanding of the functionality of the TikTok Pixel, including its collection of Plaintiffs' data, is based on my review of the Declaration of Zubair Shafiq, Ph.D. ("Shafiq Declaration"), Expert Reply Report of Zubair Shafiq, Ph.D. ("Shafiq Reply Declaration"), and Expert Report of Zubair Shafiq, Ph.D. ("Shafiq Report").<sup>37</sup> In particular, I understand that "TikTok Pixel is JavaScript source code that is embedded on non-TikTok websites."<sup>38</sup> I also understand that the TikTok Pixel "automatically collects the following seven categories of data for all events, including the default 'PageView' event: (a) Timestamp; (b) IP Address; (c) User Agent; (d) Cookies; (e) URL; (f) Event Information; and (g) Content Information."<sup>39</sup>

### II.C.3. TikTok Events API

30. My understanding of the functionality of the TikTok Events API, including its collection of Plaintiffs' data, is based on my review of the Shafiq Declaration, Shafiq Reply Declaration,

---

<sup>34</sup> ByteDance, "Our Mission," accessed Mar. 6, 2024, <https://www.bytedance.com/en/>.

<sup>35</sup> References to "TikTok" are to the specific TikTok Inc. corporate entity that is a Defendant in this lawsuit. References to the "TikTok platform" are to the online platform, which includes both the TikTok mobile app and web browser.

<sup>36</sup> ByteDance, "Our Mission," accessed Mar. 6, 2024, <https://www.bytedance.com/en/>; Adam Birney, "What is the maximum length for a TikTok video in 2024," Feb. 24, 2024, <https://www.androidauthority.com/how-long-are-tiktok-videos-3163309/>.

<sup>37</sup> Shafiq Declaration; Shafiq Reply Declaration; Shafiq Report.

<sup>38</sup> Shafiq Declaration, Section IV.B.; Conversation with Dr. Shafiq. *See also* Shafiq Reply Declaration; Shafiq Report.

<sup>39</sup> Shafiq Declaration, Section V.A. *See also* Shafiq Reply Declaration; Shafiq Report.

Dr. Shafiq defines these terms in his declaration. *See, e.g.*, Shafiq Declaration, ¶¶ 59–66.

ATTORNEY EYES' ONLY

and Shafiq Report. In particular, I understand that the Events API is a “server-to-server” data collection mechanism that “circumvents ad blockers and tracking protection features.”<sup>40</sup>

31. The Pixel and the Events API complement each other, and TikTok recommends that businesses utilize both for maximum benefits from targeting ads at users.<sup>41</sup>

## II.D. Consumer Personal Information Data as a Source of Value

32. It is well understood that as a matter of economics, information has value. Information on markets, products, competitors, and/or customers enable companies to make more effective business and profit maximizing decisions.<sup>42</sup> Value associated with information, particularly consumer information, is more than just a theoretical concept. According to the 2019 PwC survey of CEOs, data on customer and client preferences was rated as the most critical category of data.<sup>43</sup> The economic value of user data can be associated with improved marketing and product development decisions, among others. In the Mangum Class Certification Declaration,<sup>44</sup> I provided a brief set of academic findings to support the finding of the incremental value companies place on personal information and how that can impact advertising and related revenues for companies.<sup>45</sup> These studies have demonstrated how

---

<sup>40</sup> Shafiq Declaration, Section IV.C.; Conversation with Dr. Shafiq. *See also* Shafiq Reply Declaration; Shafiq Report.

<sup>41</sup> TikTok, “About Events API,” Oct. 2023, *available at* <https://ads.tiktok.com/help/article/events-api?lang=en>.

<sup>42</sup> *See, e.g.*, Robert S. Pindyck and Daniel Rubinfeld, *Microeconomics* (Upper Saddle River: Pearson Education, Inc., 2013), pp. 174–175.

<sup>43</sup> PwC, “22nd Annual Global CEO Survey,” 2019, *available at* <https://www.pwc.com/gx/en/ceo-survey/2019/report/pwc-22nd-annual-global-ceo-survey.pdf>.

This is the most recent PwC report that sought such information from the CEOs surveyed.

<sup>44</sup> I incorporate by reference the Mangum Class Certification Declaration and Reply Mangum Class Certification Declaration to this report.

<sup>45</sup> These academic articles and public materials consist of: Anas Baig, “What are Advertising Cookies and How are they used,” Securiti, Mar. 4, 2024, <https://securiti.ai/blog/advertising-cookies/>; Learn Web Analytics, “What’s the Difference Between a Cookie, a Pixel, and a Tag?” accessed June 18, 2024, <https://learnwebanalytics.com/whats-the-difference-between-a-cookie-a-pixel-and-a-tag/>; GumGum, “Contextual Vs Behavioral Targeting,” Dec. 29, 2022, <https://gumgum.com/blog/contextual-vs-behavioral-targeting>; Garrett A. Johnson, Scott K. Shriver, and Shaoyin Du, “Consumer privacy choice in online advertising: Who opts out and at what cost to industry?” *Marketing Science* 39, no. 1 (Jan.–Feb. 2020): 33–51; Alessandro Acquisti, Leslie K. John, and George Loewenstein, “What is Privacy Worth?” *The Journal of Legal Studies* 42, no. 2 (June 2013): 249–274; Aleecia M. McDonald and Lorrie Faith Cranor, “Americans’ Attitudes About Internet Behavioral Advertising Practices,” *Proceedings of the 9th annual ACM workshop on Privacy in the electronic society*, WPES 2010: 63–72; Sarah Sluis, “Marketing Professor Garrett Johnson Wants You To Know That Cookies Increase Ad Revenue,” *Ad Exchanger*, Sept. 3, 2019, <https://www.adexchanger.com/online-advertising/marketing-professor-garrett-johnson-wants-you-to-know-that-cookies-increase-ad-revenue/>; Garrett Johnson, @garjoh\_canuck, Twitter, Aug. 22, 2019, [https://twitter.com/garjoh\\_canuck/status/1164566217602031621?s=20](https://twitter.com/garjoh_canuck/status/1164566217602031621?s=20); Avi Goldfarb and Catherine Tucker, “Privacy Regulation and Online Advertising,” *Management Science* 51, no. 1 (2011): 57–71; J. Howard Beales and Jeffrey A. Eisenach, “An Empirical Analysis of the

ATTORNEY EYES' ONLY

advertisers value behavioral advertising and the personal information on which it relies. This finding is also confirmed in the Schneier Report.<sup>46</sup>

33. The economic literature also acknowledges that consumers have incentives to control how their data are used.<sup>47</sup> There are several underlying economic motivations for controlling how data are used, such as: (1) preventing direct financial losses that are more likely to occur when private information is exposed (e.g., costs from identity theft), (2) avoiding costs imposed by third parties who obtain consumers' exposed personal information, such as an increased likelihood of unwanted communications from marketers (i.e., spam email, telemarketing calls, and junk mail), and (3) avoiding loss of privacy and/or utility (i.e., consumer well-being) stemming from revelation of sensitive information (e.g., the sharing of facts about oneself that are preferred to remain undisclosed). In the Mangum Class Certification Declaration, I provided a brief set of academic findings to support the finding that consumers may exchange value for varying degrees of protection of their data and information.<sup>48</sup> These studies demonstrate a qualitative consideration underlying my analysis: consumers value their privacy and the amount by which they value their privacy can be quantified. I address specific market measures applicable for this matter in **Section V**.

---

Value of Information Sharing in the Market for Online Content," Navigant Economics, Jan. 2014, pp. 1–15 at 1.

For a more complete discussion, see my expanded analysis and review in the Mangum Class Certification Declaration. Declaration of Russell W. Mangum III, Ph.D., in Support of Plaintiffs' Motion for Class Certification, June 21, 2024, Section II.D.1.

<sup>46</sup> Expert Report of Bruce Schneier, Sept. 20, 2024, Section V (point three).

<sup>47</sup> Alessandro Acquisti, "The Economics of Personal Data and the Economics of Privacy," *OECD Joint WPISP-WPIE Roundtable*, Dec. 1, 2010, available at <https://www.oecd.org/sti/ieconomy/46968784.pdf>, pp. 15 and 18.

<sup>48</sup> These papers consist of: Paul Green and V. Srinivasan, "Conjoint Analysis in Consumer Research: Issues and Outlook," *The Journal of Consumer Research* 5, no. 2 (Sept. 1978): p. 103; Anders Gustafsson, Andreas Herrmann, and Frank Huber, *Conjoint Measurement: Methods and Applications* (Springer, 2003), pp. 7–8; Il-Horn Hann, Kai-Lung Hui, Sang-Yong Tom Lee and Ivan P. L. Png, "Overcoming Online Information Privacy Concerns: An Information-Processing Theory Approach," *Journal of Management Information Systems* 24, no. 2 (2007): pp. 13–42; Swish Goswami, "The Rising Concern Around Consumer Data And Privacy," *Forbes*, Dec. 14, 2020, <https://www.forbes.com/sites/forbestechcouncil/2020/12/14/the-rising-concern-around-consumer-data-and-privacy/>; SAS, "Data Privacy: Are You Concerned," available at <https://www.sas.com/en/whitepapers/data-privacy-110027.html>; Orson Lucas, "Corporate data responsibility," KPMG, Aug. 2021, available at <https://advisory.kpmg.us/content/dam/advisory/en/pdfs/2021/corporate-data-responsibility-bridging-the-consumer-trust-gap.pdf>; TikTok, "[Inbound] Web Signals & Tracking 2022 (Pixel Edition)," Feb. 15, 2022 (TIKTOK-BG-000009006–9028 at 9008); Hanna Krasnova, Thomas Hildebrand, and Oliver Guenther, "Investigating the Value of Privacy in Online Social Networks: Conjoint Analysis," *ICIS 2009 Proceedings*, paper 173, 2009.

For a more complete discussion, see my expanded analysis and review in the Mangum Class Certification Declaration. Mangum Class Certification Declaration, Section II.D.2.

ATTORNEY EYES' ONLY

### III. ANALYSIS FRAMEWORK

34. I understand from counsel that discovery is ongoing and that, to date, Defendants have produced limited damages-related discovery sought by Plaintiffs. In particular, Plaintiffs have requested documents relating to Defendants' revenue, expenses, and profits, both in general and as they relate to the TikTok Pixel and Events API, and Defendants have said they will not reply to such interrogatories.<sup>49</sup>
35. My work in the case is thus ongoing. I reserve the right to update, amend, modify, or supplement my analysis as appropriate if new or additional information becomes available to me.
36. I understand from counsel that the monetary relief available for the alleged wrongful conduct specified in Plaintiffs' Second Amended Complaint includes TikTok's unjust enrichment (also referred to as non-restitutionary disgorgement), Plaintiffs' actual damages (including restitution), and statutory damages. I further understand from counsel that punitive damages, nominal damages, and injunctive relief are also available for the alleged wrongful conduct. Based on this understanding, I lay out below the methodologies by which I can measure recovery, or economic remedies, for Plaintiffs. The three methodologies by which I can calculate economic damages and recovery are described in the following five sections of this report.
37. For the first methodology, given Plaintiffs' claim that Defendants were, and continue to be, unjustly enriched from their unauthorized collection and/or use of Plaintiffs' data, I lay out a calculation of disgorgement of Defendants' profits for all non-TikTok users. I understand from counsel that in seeking unjust enrichment, Plaintiffs may present evidence of the total or gross amount of the benefit that Defendants derived from the alleged misconduct, or a reasonable approximation of that amount. Subsequently, Defendants may present evidence of any allowable deductions to sales (such as returns, credits, costs, and expenses) to show the profits the Defendants gained. Further, the Defendants may also present demonstrable

---

<sup>49</sup> Defendants Responses and Objections to Plaintiffs' Sixth Set of Interrogatories to Defendants (Nos. 19–25), Sept. 12, 2024, pp. 6–7.

ATTORNEY EYES' ONLY

evidence of apportionment of profits related to factors other than the alleged wrongdoing. Based on that understanding, I lay out two approaches for calculating unjust enrichment. See **Section IV**.

38. For the second methodology, I lay out a calculation of restitutionary damages for each non-TikTok user by quantifying the economic value of (1) privacy and (2) personal data that are collected by the TikTok Pixel and Events API. In doing so, I analyze various market measures and evidence on consumer preferences, including market datapoints reflecting third parties' willingness to pay for online consumer data, studies on the value that consumers themselves place on data privacy, and consumers' payments to reduce or block unauthorized access to their personal data. See **Section V**.
39. To assist with the consideration of unjust enrichment on a pro rata basis, I present a calculation of the total number of non-TikTok user months during the Relevant Period. I then demonstrate how to allocate the pro rata unjust enrichment to a single non-TikTok user. See **Section VI**.
40. For the third methodology, I explain the methodology for calculating statutory damages pursuant to ECPA and CIPA. See **Section VII**.
41. Finally, I detail and calculate the economic damages for the three Plaintiffs. See **Section VIII**.

#### **IV. UNJUST ENRICHMENT**

42. As described above, Plaintiffs allege that Defendants were unjustly enriched as a result of the alleged unauthorized data collection through the TikTok SDK. The remedy of unjust enrichment involves disgorgement of the revenue and related profits Defendants derived from the personal data they improperly collected from Plaintiffs. In particular, I seek to identify the advertising revenue attributable to allegations Plaintiffs are making with respect to the TikTok Pixel and Events API. I understand it is Plaintiffs' burden to calculate the total or gross amount of the benefit, or a reasonable approximation thereof (i.e., revenues), and the burden then shifts to Defendants to present costs, expenses, or deductions to determine



ATTORNEY EYES' ONLY

the net benefit (i.e., profit).<sup>50</sup> Furthermore, discovery is ongoing, and has not yet revealed reliable evidence to allow me to quantify TikTok's costs related to the TikTok Pixel or Events API.

43. In **Section II.D**, I noted the reasonableness of advertisers preferring more personal information to less to improve their advertising.<sup>51</sup> In turn, companies like Defendants that make money through advertising have a profit incentive to collect and monetize the personal information that they collect. **Section IV.A** presents the evidence where Defendants have admitted how they use Plaintiffs' data yet have thus far not provided evidence on how such uses should be valued. **Section IV.B** describes the calculation of relevant revenues Defendants have earned related to the technology at-issue in this matter.

**IV.A. TikTok's Documents Demonstrate It Derives Value from Using Non-TikTok User Data**

44. [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]

<sup>50</sup> See *Brown v. Google, LLC*, 2022 WL 17961497, at \*6 (Dec. 12, 2022).

<sup>51</sup> For a more complete discussion, see my expanded analysis and review in the Mangum Class Certification Declaration. Mangum Class Certification Declaration, Section II.D.1, which I incorporate by reference here.

<sup>52</sup> Defendants' Amended Responses and Objections to Plaintiffs' Second Set of Interrogatories (Nos. 3–14), Apr. 16, 2024, pp. 57–59.

<sup>53</sup> *Id.*

<sup>54</sup> *Id.* See also Deposition of Lizzie Li, June 5, 2024, p. 278. [REDACTED]  
See, e.g., Deposition of Lizzie Li, June 5, 2024, p. 179.

<sup>55</sup> Defendants' Amended Responses and Objections to Plaintiffs' Second Set of Interrogatories (Nos. 3–14), Apr. 16, 2024, pp. 57–59. See also Deposition of Daniel Kirchgessner, Apr. 17, 2024, pp. 90–92.

ATTORNEY EYES' ONLY

- [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

46. It is reasonable to conclude [REDACTED] that there is economic value to their collection of non-TikTok user data. It is my understanding from counsel that Plaintiffs are currently in the process of seeking discovery on Defendants' internal documents that may quantify, or permit me to quantify, the economic value Defendants derive from the collection and/or use of non-TikTok user data. To date, discovery has not allowed me to calculate disgorgement, either on a class-wide basis or individually, related to Defendants' unjust enrichment based on the above admitted sources of economic value of non-TikTok user data to Defendants. In my experience, in the event

<sup>56</sup> Defendants' Amended Responses and Objections to Plaintiffs' Second Set of Interrogatories (Nos. 3–14), Apr. 16, 2024, pp. 57–59; Deposition of Daniel Kirchgessner, Apr. 17, 2024, pp. 92–98.

<sup>57</sup> Maliya Wang and Sandy Chang, "[P&C] TikTok 3P Data Retention," TikTok, n.d., pp. 5–6 (TIKTOK-BG-000002930–940 at 934–935).

<sup>58</sup> Maliya Wang and Sandy Chang, "[P&C] TikTok 3P Data Retention," TikTok, n.d., p. 9 (TIKTOK-BG-000002930–940 at 938).

<sup>59</sup> Maliya Wang and Sandy Chang, "[P&C] TikTok 3P Data Retention," TikTok, n.d., p. 3 (TIKTOK-BG-000002930–940 at 932).

<sup>60</sup> *Id.*

ATTORNEY EYES' ONLY

discovery related to this issue is not produced, such a failure to produce any financial information related to sources of economic value would be unusual.

#### IV.B. Defendants Revenues from the TikTok Pixel and Events API

47. I can calculate Defendants' unjust enrichment by assessing the functionally requisite economic value of the TikTok Pixel and Events API to Defendants. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

48. As of the date of this report, I have not received Defendants' comprehensive financial data or advertising revenue.<sup>62</sup> [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED] I first review the revenue data available (**Section IV.B.1**), then calculate revenues for the Relevant Period (**Section IV.B.2**), and finally perform an example calculation to arrive at unjust enrichment (**Section IV.B.3**).

<sup>61</sup> Deposition of Lizzie Li, June 5, 2024, pp. 214–215.

<sup>62</sup> I understand from counsel this financial information has been requested and discovery is ongoing. [REDACTED] Deposition of Sheraz Amin, Sept. 11, 2024, pp. 179–184.

<sup>63</sup> See, e.g., TIKTOK-BG-000125306–381; [REDACTED] (TIKTOK-BG-000003014 at 3016); [REDACTED] (TIKTOK-BG-000003172–192 at 173).

ATTORNEY EYES' ONLY

**IV.B.1. Revenue Data Available**

49. I understand that multiple requests for relevant financial information from Defendants have been made. However, to date I have only identified a handful of sources with revenue information related to the TikTok Pixel and Events API.

50. [REDACTED]

51. Utilizing these data, I have calculated a total of web revenue from [REDACTED]

<sup>64</sup> See Request for Production No. 108: [REDACTED] Plaintiffs' Eighth Set Of Requests For Production Of Documents And Things (Nos. 104–110), Apr. 3, 2024, no. 108.

<sup>65</sup> Email from Caitlin McKelvie, Associate, Wilson Sonsini Goodrich & Rosati, to Greg Linkh, Glancy Prongay & Murray LLP, "Re: Griffith v. TikTok: TIKTOK-BG-00175591," Aug. 13, 2024. *See also* TIKTOK-BG-000175591.

<sup>66</sup> Email from Caitlin McKelvie, Associate, Wilson Sonsini Goodrich & Rosati, to Greg Linkh, Glancy Prongay & Murray LLP, "Re: Griffith v. TikTok: TIKTOK-BG-00175591," Aug. 13, 2024. *See also* TIKTOK-BG-000175591.

<sup>67</sup> Email from Caitlin McKelvie, Associate, Wilson Sonsini Goodrich & Rosati, to Greg Linkh, Glancy Prongay & Murray LLP, "Re: Griffith v. TikTok: TIKTOK-BG-00175591," Aug. 13, 2024. *See also* TIKTOK-BG-000175591.

<sup>68</sup> See backup production.

<sup>69</sup> [REDACTED] *See* Email from Caitlin McKelvie, Associate, Wilson Sonsini Goodrich & Rosati, to Greg Linkh, Glancy Prongay & Murray LLP, "Re: Griffith v. TikTok: TIKTOK-BG-00175591," Aug. 30, 2024; TIKTOK-BG-000174995–5001 at 998; TIKTOK-BG-000175591; TIKTOK-BG-000003014; TIKTOK-BG-000003172; TIKTOK-BG-000005364; TIKTOK-BG-000125306; TIKTOK-BG-000217358; TIKTOK-BG-000284330.

18

ATTORNEY EYES' ONLY

53. As part of the Mangum Class Certification Report, I relied on several other sources to identify revenues. For the TikTok Pixel, I located two documents that identified TikTok Pixel revenue.

54. [REDACTED]  
[REDACTED]  
[REDACTED]

55. [REDACTED]  
[REDACTED]  
[REDACTED].<sup>80</sup>

---

<sup>79</sup> TikTok, [REDACTED] p. 44 (TIKTOK-BG-000125306–381 at 349).

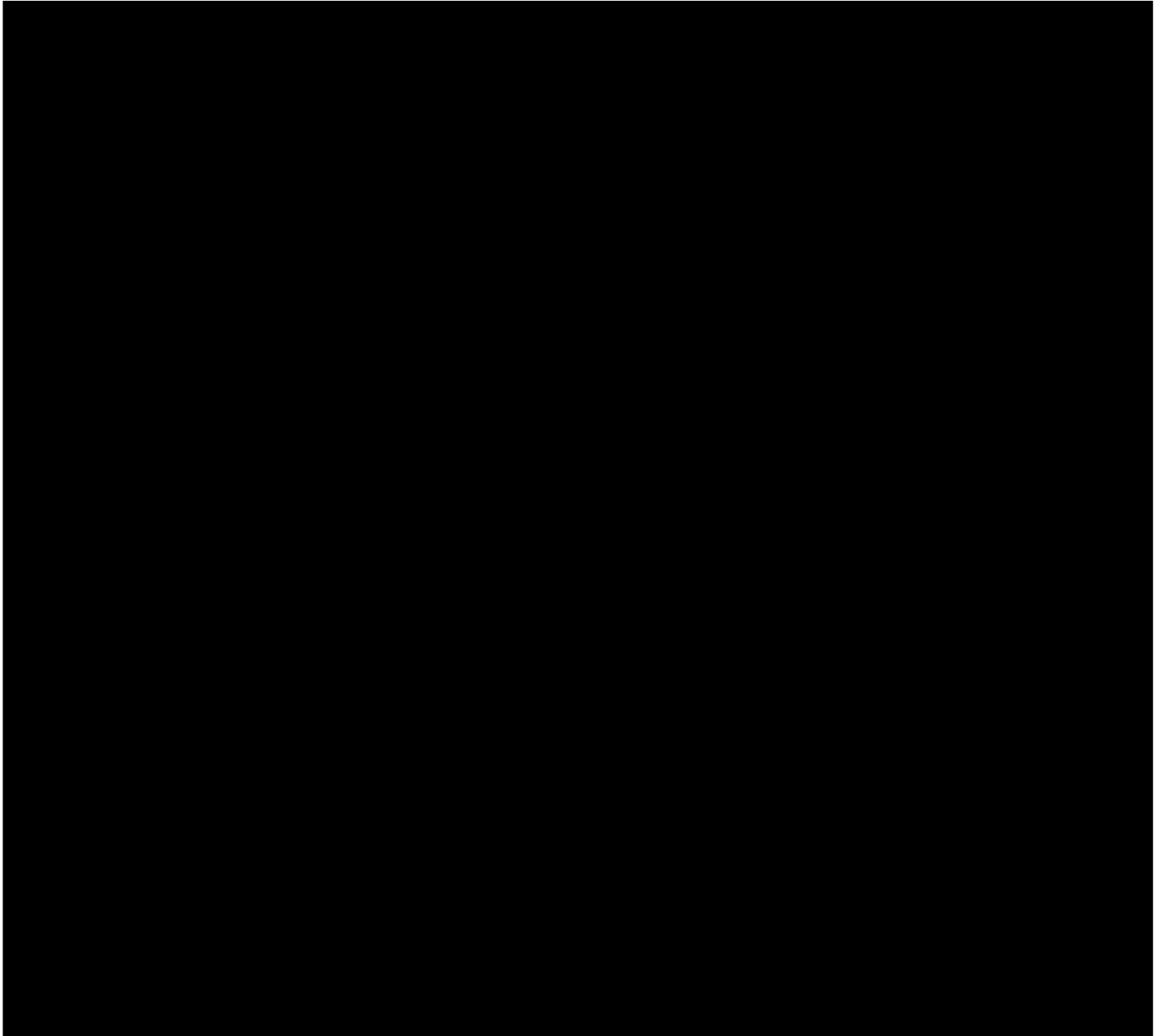
[REDACTED]  
[REDACTED] (TIKTOK-BG-000125306–381 at 310, 325, and 345–346). For purposes of my analysis, I will assume the data come from [REDACTED]

This value is consistent with another document from TikTok that notes around \$1 million per day of revenue around March 2021. TikTok, “Signals, Identity, Datahub/silo 2022 Shareout,” p. 3 (TIKTOK-BG-000217358–380 at 360).

<sup>80</sup> To date, TikTok has not yet produced the underlying data that created this chart.

[REDACTED] (TIKTOK-BG-000217358–380 at 360).

ATTORNEY EYES' ONLY



■ [REDACTED]  
[REDACTED]  
[REDACTED] ■

■ [REDACTED]  
[REDACTED]

---

81 [REDACTED] (TIKTOK-BG-000003014 at 3016).

■ [REDACTED] (TIKTOK-BG-000003014 at 3016) (emphasis removed).

83 [REDACTED] (TIKTOK-BG-000284330–543).

ATTORNEY EYES' ONLY

[REDACTED]

[REDACTED]

---

<sup>84</sup> *Id.* at 478–479.

<sup>85</sup> *Id.* at 462–464.

<sup>86</sup> [REDACTED] (TIKTOK-BG-000285298–319 at 299).

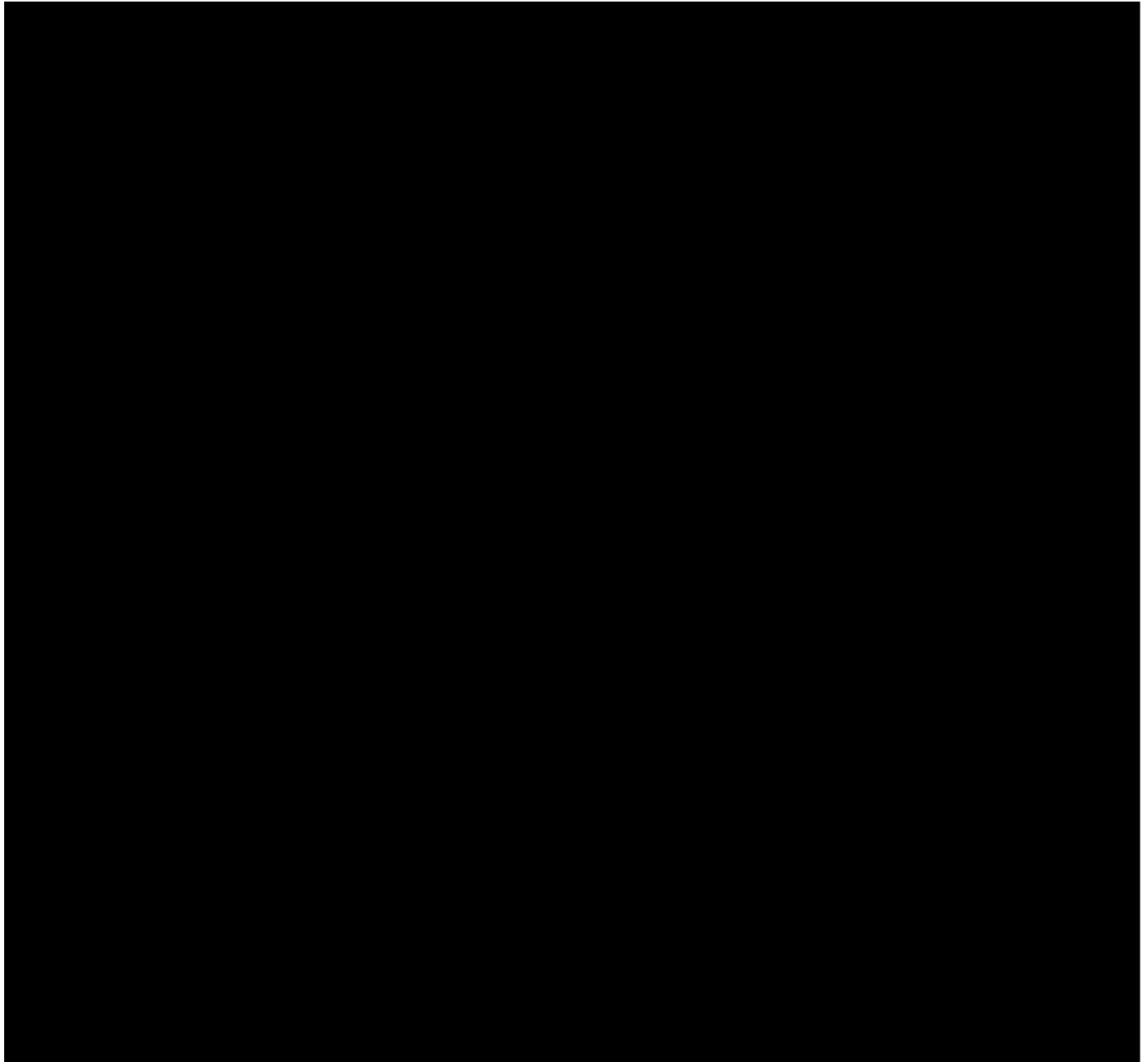
<sup>87</sup> [REDACTED] p. 2 (TIKTOK-BG-000003172–192 at 173).

[REDACTED] (TIKTOK-BG-000217358–380 at 360).

<sup>88</sup> To date, TikTok has not yet produced the underlying data that created this chart.



ATTORNEY EYES' ONLY



[REDACTED]

---

89 [REDACTED] (TIKTOK-BG-000003172-192 at 173) (red focus box in original).

ATTORNEY EYES' ONLY

[REDACTED]

[REDACTED]

60.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

---

<sup>90</sup> [REDACTED] (TIKTOK-BG-000003172–192 at 180).

<sup>91</sup> [REDACTED] (TIKTOK-BG-000005364–392 at 366).

<sup>92</sup> [REDACTED] (TIKTOK-BG-000284330–543 at 423).

<sup>93</sup> To date, TikTok has not yet produced the underlying data that created this chart.

<sup>94</sup> [REDACTED] (TIKTOK-BG-000005364–392 at 366).

ATTORNEY EYES' ONLY

61. The revenue sources available to me as of the date of this report can be found in **Figure 4**.

**Figure 4: Revenue Data Available**

Type	Date	Value	Source
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]

**IV.B.2. Revenues for the Relevant Period**

62. Utilizing the above revenue data, I can estimate revenues for the Relevant Period.

63. [REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]

64. [REDACTED]  
[REDACTED]  
[REDACTED]

<sup>95</sup> See backup production.

<sup>96</sup> [REDACTED]  
[REDACTED] See backup production.

ATTORNEY EYES' ONLY

[REDACTED]

[REDACTED]

[REDACTED] I determine a range of values for TikTok revenues associated with the TikTok Pixel and Events API over the Relevant Period (see **Figure 5**).

66.

[REDACTED]

---

<sup>97</sup> TIKTOK-BG-000003172.

<sup>98</sup> [REDACTED]

<sup>99</sup> For example, with respect to TIKTOK-BG-000175591, [REDACTED] Email from Caitlin McKelvie, Associate, Wilson Sonsini Goodrich & Rosati, to Greg Linkh, Glancy Prongay & Murray LLP, "Re: Griffith v. TikTok: TIKTOK-BG-00175591," Aug. 13, 2024.

<sup>100</sup> [REDACTED] deposition of Sheraz Amin, Sept. 11, 2024, p. 205.

<sup>101</sup> TikTok reported annual U.S. revenue of \$16 billion for 2023, representing 13 percent of ByteDance's \$120 billion reported global revenue over the same period. Reuters, "TikTok's US revenue hits \$16 bln as Washington threatens ban, FT reports," Mar 15, 2024, *available at* <https://www.reuters.com/technology/tiktoks-us-revenue-hits-16-bln-washington-threatens-ban-ft-reports-2024-03-15/>; FT Reports, "TikTok's US revenues hit \$16bn as Washington threatens ban," Financial Times, Mar. 15, 2024, *available at* <https://www.ft.com/content/275bd036-8bc2-4308-a5c9-d288325b91a9>.

<sup>102</sup>  $\$16 \div \$120 = 13\%$ .

<sup>103</sup> For example, I understand Pangle is the ad network of TikTok for Business and is a ByteDance company. I also understand that Pangle is a platform that does not operate in the U.S. Pangle, "Ad Network of TikTok for Business," accessed June 19, 2024, <https://www.pangleglobal.com/>; Email from Caitlin McKelvie, Associate, Wilson Sonsini Goodrich & Rosati, to Greg Linkh, Glancy Prongay & Murray LLP, "Re: Griffith v. TikTok: TIKTOK-BG-00175591," Aug. 30, 2024.

ATTORNEY EYES' ONLY

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED] If I subsequently receive additional data indicating that the percentage of U.S. revenues is determined to be higher or lower, I reserve the right to update this number accordingly.

**Figure 5: Global and U.S. Revenues for the Relevant Period<sup>105</sup>**

[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]

67. The three approaches above represent a reasonable understanding of TikTok's revenue associated with the TikTok Pixel and Events API. These can be considered the gross revenues I understand are at issue in this matter and that are causally linked to TikTok's unjust enrichment. As mentioned above, if Defendants subsequently claim to have identified and substantiated appropriate deductions from revenue and/or apportionment of profit to factors other than the alleged wrongdoing, I will consider those claims and respond appropriately.

<sup>104</sup> TIKTOK-BG-003048685. See backup production.

<sup>105</sup> See **Appendix 3** for additional backup calculations.

<sup>106</sup> [REDACTED]

<sup>107</sup> This takes the global values and multiplies by 13%. As noted above, the file produced within 48 hours of submitting this report indicates that the 13% adjustment may be understated by a factor of approximately 2. See backup production.

## ATTORNEY EYES' ONLY

**IV.B.3. Example Calculation of the Costs, Profits, and Apportionment Related to TikTok's Unjust Enrichment Related to Defendants Revenues**

68. As of the date of this report, I have seen no discovery evidence regarding Defendants costs or profits for any portion of its business (e.g., overall, by division, by country, considering the TikTok SDK). I understand it is Plaintiffs' burden to calculate the total or gross amount of the benefit, or a reasonable approximation thereof (i.e., revenues), and the burden then shifts to Defendants to present costs, expenses, or deductions to determine the net benefit (i.e., profit).<sup>108</sup>
69. In order to provide context for my above analysis (which as noted above also is incomplete in ways that are also unusual from the perspective of disclosure from Defendants), in this section I will calculate an example of the unjust enrichment profits modeling TikTok profit margins based on its competitors of Facebook, Twitter, Google, or Snapchat. I identify the gross margins for these additional social networking and digital marketing companies in **Figure 6**.

**Figure 6: Gross Margins for Companies Similar to TikTok at Similar Years as the Relevant Period<sup>109</sup>**

Company	4th–6th Years of Monetization	4th Year	5th Year	6th Year	Weighted Average
Facebook	2010–2012	75%	77%	73%	75%
Twitter	2013–2015	60%	68%	67%	66%
Google	2003–2005	57%	54%	58%	57%
Snapchat	2018–2020	32%	48%	53%	47%

70. This results in a weighted average gross margin of 61% that I apply to the U.S. revenues for the three approaches in **Figure 7**.<sup>110</sup>

<sup>108</sup> See *Brown v. Google, LLC*, 2022 WL 17961497, at \*6 (Dec. 12, 2022).

<sup>109</sup> Facebook, Inc., Annual Report (Form 10-K) (Feb. 1, 2013), p. 45; Twitter, Inc., Annual Report (Form 10-K) (Feb. 29, 2016), p. 39; Google Inc., Annual Report (Form 10-K) (Mar. 16, 2006), p. 41; Snap Inc., Annual Report (Form 10-K) (Feb. 5, 2021), p. 43; TIKTOK-BG-000172448–478 at 450. Comparative years of monetization align with TikTok's stage of growth from 2022–2024. For Snapchat and Facebook, I utilize TIKTOK-BG-000172448–478 at 450 to determine the comparable years with TikTok. For Google and Twitter, I use the earliest year of revenue available on their 10-K filings. Gross Margin is calculated as (Revenue – Cost of Revenue) ÷ Revenue. See **Appendix 3** for additional details on calculations.

<sup>110</sup> This is the simple average of the four weighted averages.

ATTORNEY EYES' ONLY

**Figure 7: Calculated U.S. Gross Margin**

[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]

71. It is also relevant to apportion these values to the non-TikTok users that are at-issue in this matter. TikTok has provided no method by which to apportion these values between TikTok users and non-TikTok users. As noted with respect to the evidence in **Section IV.A**, TikTok has identified that there is clear economic value associated with respect to non-TikTok user data but to date has not provided any quantitative evidence of that. Should Defendants provide an apportionment procedure to this analysis, I reserve the right to review such evidence and consider the evidence for my opinion.

## V. RESTITUTIONARY DAMAGES

72. As an alternative to the unjust enrichment remedy, I have considered actual, or restitutionary, damages to Plaintiffs resulting from the alleged wrongful conduct since the start of the Relevant Period. As described below, such actual (or restitutionary) damages can be determined as a form of payments necessary to compensate for the market value of the information allegedly wrongfully collected from Plaintiffs. I have identified various market measures of the economic market value of privacy and the economic value of personal information (i.e., market measures of values exchanged between buyers and sellers of personal information similar to that collected by the TikTok Pixel and Events API).
73. The first of these market measures includes the fees that corporations like AT&T and Meta have charged customers in exchange for *not* collecting or sharing personal data. The value of personal information is apparent from the fact that companies are willing to charge premiums from their customers when that company is unable to utilize personal information to support its advertising revenues. These companies make a direct translation between the lack of advertising revenue they will receive as a result of failing to capture personal

<sup>111</sup> As noted above, the file produced within 48 hours of submitting this report indicates that the 13% adjustment may be understated by a factor of approximately 2. See backup production.

ATTORNEY EYES' ONLY

information and a premium in fees. In return, these customers also get to decide if the additional cost is worth the added insulation of their personal information and increase in their online privacy. See **Section V.A.**

74. The second market measure analysis consists of payments that corporations like Google and Ipsos, Nielsen, SavvyConnect, and Reclaim have paid to individuals to track their online activity. The value of personal information is apparent from the fact that companies pay users for the collection of their online data. The willingness of these companies to provide direct payment to individuals demonstrates the monetary value companies place on collecting and understanding online behavior and personal data. There are multiple examples of research companies that pay users to download software that collects data on the users' online activity. See **Section V.B.**
75. Next, I use these market measures to determine the economic value of Plaintiffs' data on a per month basis. The appropriate restitutionary damage methodology is consistent across Plaintiffs. See **Section V.C.**
76. Finally, I calculate the total number of non-TikTok users and associated months for the Relevant Period to assist with the consideration of unjust enrichment on a pro rata basis. I then demonstrate how to allocate the pro rata unjust enrichment to a single non-TikTok user. See **Section VI.**

**V.A. Companies Charge Premiums for Products When Collection and/or Use of User Data is Restricted**

77. Some companies that historically obtained user data have considered alternate pricing using a premium for their products and services where the collection and/or use of consumer data is restricted. The increased price can reflect an increase in the cost of business due to a limitation on data collected or extent of its use, as well as a premium consumers place on any actual or perceived privacy enhancement or user experience. Regardless, companies have signaled that limiting their collection and/or use of consumer data could be available in exchange for increased payment received, further indicating value associated with data itself.



ATTORNEY EYES' ONLY

**V.A.1. AT&T and “GigaPower”**

78. AT&T differentiated pricing for its customers in Austin, Texas by launching “GigaPower” internet service in 2013. The price was \$70 per month if AT&T and its partners provided targeted ads to its customers, and the price was \$99 per month if there were no targeted ads.<sup>112</sup> If a customer selected the \$70 option and opted in to targeted ads, then it was reported that AT&T also “collect[ed] data regardless of a Web browser’s privacy settings for cookies, do-not-track, and private browsing.”<sup>113</sup>
79. This differential of \$29 per month (in the per-month service fee) thus demonstrates the value that AT&T is willing to forgo to serve targeted ads.<sup>114</sup> I understand the program was ultimately discontinued in 2016—but that indicates AT&T charged, and a customer may have spent, almost an additional \$1,000 in service fees alone to avoid targeted ads and further use of personal data, just from AT&T and its partners, over 34 months.<sup>115</sup> Apparently up to “three-fourths” of customers opted for the less expensive “tracking” plan while it was offered, and in doing so received compensation in the form of the subscription-fee discount.<sup>116</sup>

---

<sup>112</sup> Jon Brodtkin, “AT&T offers gigabit Internet discount in exchange for your Web history,” *Ars Technica*, Dec. 11, 2013, <https://arstechnica.com/information-technology/2013/12/att-offers-gigabit-internet-discount-in-exchange-for-your-web-history/>; Natasha Singer, “AT&T’s Offer: Share Your Data for Personalized Ads, or Pay More,” *New York Times*, Feb. 18, 2015, <https://archive.nytimes.com/bits.blogs.nytimes.com/2015/02/18/atts-offer-share-your-data-for-personalized-ads-or-pay-more/>; David Auerbach, “Privacy Is Becoming a Premium Service,” *Slate*, Mar. 31, 2015, <https://slate.com/technology/2015/03/at-t-gigapower-the-company-wants-you-to-pay-it-not-to-sell-your-data.html>.

<sup>113</sup> Jon Brodtkin, “AT&T to end targeted ads program, give all users lowest available price,” *Ars Technica*, Sept. 30, 2016, <https://arstechnica.com/information-technology/2016/09/att-to-end-targeted-ads-program-give-all-users-lowest-available-price/>.

AT&T apparently did “not collect information from secure (https) or otherwise encrypted sites.” Stacey Higginbotham, “AT&T’s GigaPower plans turn privacy into a luxury that few would choose,” *Yahoo! Finance*, May 13, 2014, <https://finance.yahoo.com/news/t-gigapower-plans-turn-privacy-203513501.html>.

<sup>114</sup> Jon Brodtkin, “AT&T offers gigabit Internet discount in exchange for your Web history,” *Ars Technica*, Dec. 11, 2013, <https://arstechnica.com/information-technology/2013/12/att-offers-gigabit-internet-discount-in-exchange-for-your-web-history/>; Stacey Higginbotham, “AT&T’s GigaPower plans turn privacy into a luxury that few would choose,” *Yahoo! Finance*, May 13, 2014, <https://finance.yahoo.com/news/t-gigapower-plans-turn-privacy-203513501.html>.

<sup>115</sup> \$29 per month × 34 months = \$986.

<sup>116</sup> Stacey Higginbotham, “AT&T’s GigaPower plans turn privacy into a luxury that few would choose,” *Yahoo! Finance*, May 13, 2014, <https://finance.yahoo.com/news/t-gigapower-plans-turn-privacy-203513501.html>.

ATTORNEY EYES' ONLY

**V.A.2. Meta's "Pay or Okay" Monetization Approach in Europe**

80. In Europe, consumer privacy is regulated under the General Data Protection Regulation ("GDPR"), which requires companies to have a legal basis for processing consumer data.<sup>117</sup> Ultimately, Europe requires that users opt-in or opt-out with explicit consent for sharing personal information with a website or app. As a result of such requirements, companies have reacted in a number of ways. One such approach taken by Meta is a program called "pay or okay."
81. Under this program, Meta charges a fee to Facebook and Instagram users who do not wish to be tracked. Meta's "pay or okay" system requires Facebook and Instagram users "to either pay a 'privacy fee' of" approximately \$270 "per year or agree to be tracked."<sup>118</sup> In addition, Meta's fee is not based on prior user behavior, the amount of time spent on the apps, or tied to other activity on Meta's apps, but instead is static between users.
82. The \$270 fee frees consumers from tracking carried out only by Facebook and Instagram, not other companies. Apparently "30% of the top 100 websites in Germany are already using 'Pay or Okay.'"<sup>119</sup> This trend is so pervasive that, by one estimate, a "family of four with just 35 apps per phone would end up with a bill of" approximately \$37,700 per year.<sup>120</sup>

---

<sup>117</sup> See Andrew Rossow, "The Birth of GDPR: What Is It And What You Need To Know," *Forbes*, May 25, 2018, <https://www.forbes.com/sites/andrewrossow/2018/05/25/the-birth-of-gdpr-what-is-it-and-what-you-need-to-know/>; European Union, "Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the Protection of Natural Persons with Regard to the Processing of Personal Data and on the Free Movement of Such Data, and Repealing Directive 95/46/EC (General Data Protection Regulation)," May 4, 2016, <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A02016R0679-20160504&qid=1532348683434>.

<sup>118</sup> NOYB, "28 NGOs urge EU DPAs to reject 'Pay or Okay' on Meta," Feb. 16, 2024, <https://noyb.eu/en/28-ngos-urge-eu-dpas-reject-pay-or-okay-meta>. See also Léa Roubinet, "'Pay or Okay' – The Move to Paid Subscriptions on Social Networks," *Tech Policy*, Feb. 6, 2024, available at <https://www.techpolicy.press/pay-or-okay-the-move-to-paid-subscriptions-on-social-networks/>; Meta, "Facebook and Instagram to Offer Subscription for No Ads in Europe," press release, Oct. 30, 2023, available at <https://about.fb.com/news/2023/10/facebook-and-instagram-to-offer-subscription-for-no-ads-in-europe/>; Eric Benjamin Seufert, "What is an 'appropriate fee' for a social media subscription," *Mobile Dev Memo*, Dec. 1, 2023, available at <https://mobiledevmemo.com/what-is-an-appropriate-fee-for-a-social-media-subscription/>; NOYB, "EDPB Opinion: Meta cannot rely on 'Pay or Okay,'" Apr. 17, 2024, <https://noyb.eu/en/statement-edpb-pay-or-okay-opinion>.

The amount listed in the article was €251.88. At an exchange rate of \$1.07 to €1, this equals \$269.51.

<sup>119</sup> NOYB, "'Pay or Okay': 1,500 € a year for your online privacy?" Mar. 19, 2024, <https://noyb.eu/en/pay-or-okay-1500-eu-year-your-online-privacy>; NOYB, "28 NGOs urge EU DPAs to reject 'Pay or Okay' on Meta," Feb. 16, 2024, <https://noyb.eu/en/28-ngos-urge-eu-dpas-reject-pay-or-okay-meta>.

<sup>120</sup> NOYB, "28 NGOs urge EU DPAs to reject 'Pay or Okay' on Meta," Feb. 16, 2024, <https://noyb.eu/en/28-ngos-urge-eu-dpas-reject-pay-or-okay-meta>. See also Léa Roubinet, "'Pay or Okay' – The Move to Paid Subscriptions on Social Networks," *Tech Policy*, Feb. 6, 2024, available at <https://www.techpolicy.press/pay-or-okay-the-move-to-paid-subscriptions-on-social-networks/>.

ATTORNEY EYES' ONLY

83. Importantly, Meta's privacy fee represents the monetary amount associated with the data it collects per user per year. By charging this fee, Meta acknowledges that it otherwise is collecting something of value (i.e., individuals' data) from its users.
84. These two examples from AT&T and Meta demonstrate the tremendous value companies place on the collection and/or use of personal information from their customers. Both have monthly fees of similar magnitudes, the charged premium is uniform between customers, and users in the marketplace can accept the higher prices for protecting their information or choose to save money for the collection of their data. These two market measures demonstrate examples of methods and metrics for modeling actual damages non-TikTok users face based on TikTok's collection of personal information through the TikTok Pixel and Events API.

## **V.B. Companies Place a Market Value on Collection of User Data**

85. This section provides examples of certain companies other than TikTok that place a market value on user's data. Each example shows market values that do not vary based on the underlying characteristics of a particular user, though some of the measures vary based on the variety of tracking systems utilized (e.g., capturing information beyond online browsing related data, such as data from mobile device usage and TV viewership).

### **V.B.1. Ipsos Screenwise and Google**

86. Ipsos is a market research and survey company that Google has historically used for consumer research by collecting personal information from users through tracking tools.<sup>121</sup>

---

subscriptions-on-social-networks/; Meta, "Facebook and Instagram to Offer Subscription for No Ads in Europe," press release, Oct. 30, 2023, *available at* <https://about.fb.com/news/2023/10/facebook-and-instagram-to-offer-subscription-for-no-ads-in-europe/>; Eric Benjamin Seufert, "What is an 'appropriate fee' for a social media subscription," Mobile Dev Memo, Dec. 1, 2023, *available at* <https://mobiledevmemo.com/what-is-an-appropriate-fee-for-a-social-media-subscription/>; NOYB, "EDPB Opinion: Meta cannot rely on 'Pay or Okay,'" Apr. 17, 2024, <https://noyb.eu/en/statement-edpb-pay-or-okay-opinion>.

The amount listed in the article was €35,263.20. At an exchange rate of \$1.07 to €1, this equals \$37,731.62.

<sup>121</sup> Ipsos, "Ipsos Screenwise Panel Cookie Policy," June 25, 2021, <https://screenwisepanel.com/cookie-policy>; Ipsos, "About the Ipsos Screenwise Panel," accessed Sept. 13, 2024, <https://screenwisepanel.com/home>; Ipsos, "About the Ipsos Screenwise Panel," accessed Mar. 7, 2024, <https://screenwisepanel.com/home>; Dante D'Orazio, "Google Screenwise pays opt-in users for expanded web tracking," The Verge, Feb. 8, 2012, <https://www.theverge.com/2012/2/8/2785751/google-screenwise-panel-web-monitoring-knowledge-networks>; Casey Johnston, "Google paying users to track 100% of their Web usage via little block box," Ars Technica, Feb. 8, 2012,

ATTORNEY EYES' ONLY

Members of the Ipsos Screenwise Panel are paid to have their online, electronic, and other activity tracked. This information allows Google to better understand how users interact with its own products.<sup>122</sup> Members of this panel can request their data to be deleted and yet, Google still generates value from such data. For instance, Google “may aggregate, anonymize, or otherwise de-identify any personal information instead of deleting it,” and even when no longer part of the panel, Google “may continue to store, use, and share the information previously obtained.”<sup>123</sup> On the Google Play website, Google shows Screenwise Meter has more than 100,000 downloads.<sup>124</sup>

87. Although publicly available information from Ipsos on payments and rewards for members of the Screenwise panel are limited and have changed over time, all data points indicate that (1) participants are paid in exchange for allowing Google to access their browsing data and (2) the amounts paid for the browsing data are uniform across users. According to a 2012 image on Google’s webpage explaining Screenwise, users would receive \$5 Amazon gift cards every three months in exchange for installing the browser extension.<sup>125</sup> Another article from 2012 reports that household members received \$100 for signing up and then \$20 per month by installing additional software and hardware.<sup>126</sup> Information relating to the Screenwise program payments describe a similar reward structure (with increasing reward values in more recent years).<sup>127</sup> For example, in September 2020, a Reddit user posted

---

<https://arstechnica.com/gadgets/2012/02/google-paying-users-to-track-100-of-their-web-usage-via-little-black-box/>.

<sup>122</sup> Ipsos, “Google Panel Privacy Policy,” Dec. 28, 2022, <https://screenwisepanel.com/google-panel-privacy-policy>.

<sup>123</sup> Ipsos, “Google Panel Privacy Policy,” Dec. 28, 2022, <https://screenwisepanel.com/google-panel-privacy-policy>.

<sup>124</sup> Google Play, “Screenwise Meter,” accessed Sept. 17, 2024, <https://play.google.com/store/apps/details?id=com.google.android.apps.userpanel>. Given the large number of downloads, it is evident that this app and the presence of Ipsos Screenwise in the marketplace is significant and lends credibility to my use of this as an appropriate market measure. I understand the Apple “App Store doesn’t show an estimate of downloads like the Google Play Store does.” Evan Gower, “How To View How Many Times An App Has Been Downloaded,” Alphr, Apr. 30, 2021, <https://www.alphr.com/view-downloads-app/>.

<sup>125</sup> Google, “Help Us Make Google Better,” Feb. 10, 2012, image from internet archive, *available at* <https://web.archive.org/web/20120210041154/http://www.google.com/landing/screenwisepanel/>. *See also* Dante D’Orazio, “Google Screenwise pays opt-in users for expanded web tracking,” *The Verge*, Feb. 8, 2012, <https://www.theverge.com/2012/2/8/2785751/google-screenwise-panel-web-monitoring-knowledge-networks> (\$5 for every three months of tracking).

<sup>126</sup> Dante D’Orazio, “Google Screenwise pays opt-in users for expanded web tracking,” *The Verge*, Feb. 8, 2012, <https://www.theverge.com/2012/2/8/2785751/google-screenwise-panel-web-monitoring-knowledge-networks>.

<sup>127</sup> Similar to the increased reward values over time, concern over privacy and personal data use has also increased over time. TikTok acknowledges this in internal documents. *See, e.g.*, Swish Goswami, “The Rising Concern Around Consumer Data And Privacy,” *Forbes*, Dec. 14, 2020, <https://www.forbes.com/sites/forbestechcouncil/2020/12/14/the-rising-concern-around-consumer-data-and-privacy/>. *See also* a 2018 SAS survey of over 500 US consumers, in which

ATTORNEY EYES' ONLY

information on the categories of weekly rewards a panelist could receive at that point in time.<sup>128</sup> The weekly reward for allowing Ipsos to track browser activity was \$1 per week (or \$4.33 per month).<sup>129</sup> There are also separate incremental rewards for allowing Screenwise to collect information from a router, cell phone, tablet, or TV.<sup>130</sup> These 2020 figures are consistent with a Screenwise panel rewards summary listed on an August 2020 review from the personal money making and saving website LushDollar.com.<sup>131</sup>

88. In addition, an undated screenshot produced in another action confirms the amounts and devices information collected from the Screenwise program. For example, the following screenshot in **Figure 8** from Ipsos demonstrates the same reward and payment structures for each participant in the program:

---

“Almost three-fourths (73 percent) of survey participants said they are more concerned about their data privacy now than they were a few years ago.” SAS, “Data Privacy: Are You Concerned,” *available at* <https://www.sas.com/en/whitepapers/data-privacy-110027.html>. In 2021 KPMG conducted a similar survey of 2,000 adults in the US and found that the vast majority of respondents “say data privacy is a growing concern.” Orson Lucas, “Corporate data responsibility,” KPMG, Aug. 2021, *available at* <https://advisory.kpmg.us/content/dam/advisory/en/pdfs/2021/corporate-data-responsibility-bridging-the-consumer-trust-gap.pdf>. In addition, since the Hann et al. study was conducted, the EU passed the GDPR and California signed the CCPA; TikTok, “[Inbound] Web Signals & Tracking 2022 (Pixel Edition),” Feb. 15, 2022 (TIKTOK-BG-000009006–9028 at 9008).

<sup>128</sup> cobaltorange, “Does anyone still do Screenwise Panel?” Reddit, Sept. 20, 2020, [https://www.reddit.com/r/beermoney/comments/iwijxm/does\\_anyone\\_still\\_do\\_screenwise\\_panel/?rdt=38358](https://www.reddit.com/r/beermoney/comments/iwijxm/does_anyone_still_do_screenwise_panel/?rdt=38358).

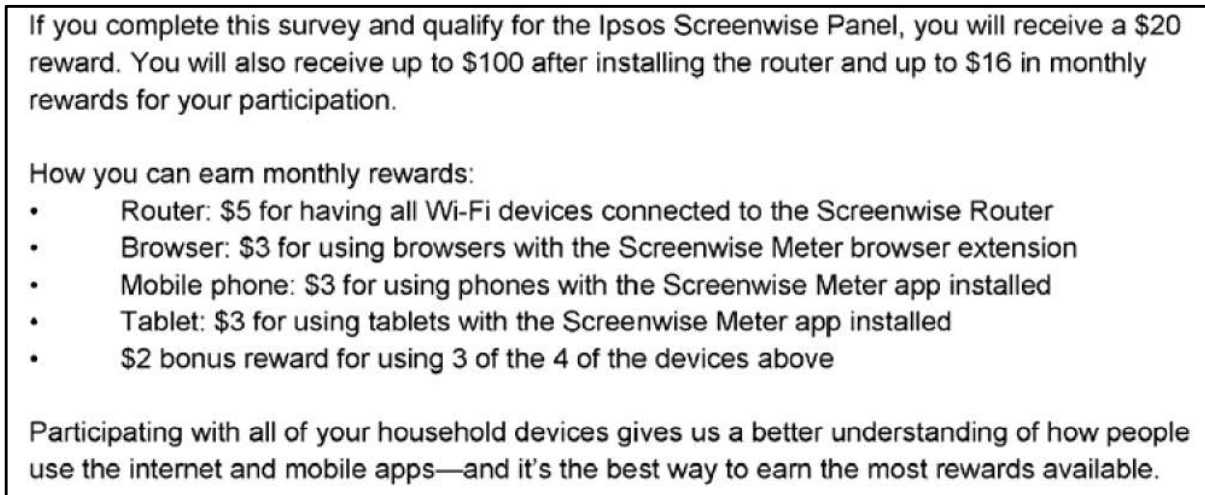
<sup>129</sup> With 52 weeks in a year and 12 months in a year, \$1 per week equals \$4.33 per month.

<sup>130</sup> cobaltorange, “Does anyone still do Screenwise Panel?” Reddit, Sept. 20, 2020, [https://www.reddit.com/r/beermoney/comments/iwijxm/does\\_anyone\\_still\\_do\\_screenwise\\_panel/?rdt=38358](https://www.reddit.com/r/beermoney/comments/iwijxm/does_anyone_still_do_screenwise_panel/?rdt=38358).

<sup>131</sup> Tom Nathaniel, “Screenwise Meter Panel Review: Money for Nothing?” LushDollar.com, Aug. 12, 2020, <https://lushdollar.com/the-screenwise-meter-panel/>.

ATTORNEY EYES' ONLY

**Figure 8: Summary of Rewards and Payments from Ipsos Screenwise<sup>132</sup>**



89. In 2023, it was reported that the Screenwise Panel was at that time paying \$2 per week (or \$8.67 per month) for tracking through a browser extension and mobile meter.<sup>133</sup>
90. The Ipsos Screenwise Panel aims to gather data from a nationally representative sample. The homepage of the Screenwise Panel's website states that the goal of the panel is to "improve products for everyone, by learning how people use the internet, mobile apps, and TVs."<sup>134</sup> Further, the panel is stated to help "Google better understand how consumers use technology and digital media."<sup>135</sup> These objectives highlight the Screenwise panel's focus on gathering insights that represent the general U.S. population.
91. On the Screenwise Panel's help center, Ipsos asserts that they combine an individual's data "with other peoples [sic] data and use it in aggregate" in order to "learn how U.S. adults and teens age 13+ use the internet."<sup>136</sup> This claim continues to stress the importance placed on generating representative insights on how the U.S. population uses the internet.

<sup>132</sup> *Rodriguez et al., v. Google LLC*, Case No. 3:20-cv-04688-RS (DI 364, Exhibit 23), Expert Report of Michael J. Lasinski, Feb. 20, 2023, p. 51. The Lasinski report does not indicate when these payments were in place.

<sup>133</sup> The Penny Hoarder, "How to Make \$345/Year By Installing These 3 Apps," Sept. 11, 2023, accessed Mar. 1, 2024, <https://www.thepennyhoarder.com/make-money/how-to-make-295year-by-installing-these-2-apps/>.

<sup>134</sup> Ipsos, "Screenwise Panel Sign In," <https://screenwisepanel.com/>.

<sup>135</sup> Ipsos, "Screenwise Panel Hardware Usage and Return Agreement," <https://screenwisepanel.com/hardware-policy>.

<sup>136</sup> Ipsos, "How Can We Help You?" <https://screenwisepanel.com/helpcenter>.



ATTORNEY EYES' ONLY

92. Additionally, after emailing the Screenwise Panel support team through its contact portal, I was informed that “qualifying households are chosen randomly through a process called Address Based Sampling, a form of probability sampling” with their reasoning being “to ensure scientific validity, and to maintain a random representation of the U.S. population in the Panel.”<sup>137</sup> Address Based Sampling utilizes the list of residential addresses available from the United States Postal Service (USPS) Computerized Delivery Sequence file (CDS) to select a sample frame from to reach potential participants.<sup>138</sup> The sample frame can then be stratified based on certain demographic and geographic characteristics to achieve a representative sample.<sup>139</sup> Using Address Based Sampling is more cost effective and able to reach a wider coverage of the population than traditional telephone or area-based sampling methods, and thus is utilized by the Screenwise Panel in striving for a nationally representative sample.<sup>140</sup>
93. The evidence with respect to Screenwise demonstrates a single monthly amount is given to the program participants when their personal information is collected through internet browsing, and that a wide array of individuals are selected for participation in the panel.

**V.B.2. Nielsen**

94. Another example is Nielsen, a professional research company and “the world’s leading provider of media and marketing information” that funds a panel for computer and mobile data.<sup>141</sup> In 2023, the panel offered up to \$50 per year to its participants, or \$4.17 per

---

<sup>137</sup> Email from Screenwise Panel Support, Ipsos, “Re: Screenwise Member portal – Panel Member enquiry Ipsos:0670694,” Sept. 12, 2024.

<sup>138</sup> Sylvia Dohrmann, Trent D. Buskirk, Ashley Hyon, and Jill Montaquila, “Address Based Sampling Frames for Beginners,” American Statistical Association Joint Statistical Meetings, 2014, *available at* [http://www.asasrms.org/Proceedings/y2014/files/311401\\_87449.pdf](http://www.asasrms.org/Proceedings/y2014/files/311401_87449.pdf), pp. 1010 and 1014; Email from Screenwise Panel Support, Ipsos, “Re: Screenwise Member portal – Panel Member enquiry Ipsos:0670694,” Sept. 12, 2024.

<sup>139</sup> Sylvia Dohrmann, Trent D. Buskirk, Ashley Hyon, and Jill Montaquila, “Address Based Sampling Frames for Beginners,” American Statistical Association Joint Statistical Meetings, 2014, *available at* [http://www.asasrms.org/Proceedings/y2014/files/311401\\_87449.pdf](http://www.asasrms.org/Proceedings/y2014/files/311401_87449.pdf), pp. 1010, 1014, and 1016; Email from Screenwise Panel Support, Ipsos, “Re: Screenwise Member portal – Panel Member enquiry Ipsos:0670694,” Sept. 12, 2024.

<sup>140</sup> Sylvia Dohrmann, Trent D. Buskirk, Ashley Hyon, and Jill Montaquila, “Address Based Sampling Frames for Beginners,” American Statistical Association Joint Statistical Meetings, 2014, *available at* [http://www.asasrms.org/Proceedings/y2014/files/311401\\_87449.pdf](http://www.asasrms.org/Proceedings/y2014/files/311401_87449.pdf), p. 1009; Email from Screenwise Panel Support, Ipsos, “Re: Screenwise Member portal – Panel Member enquiry Ipsos:0670694,” Sept. 12, 2024.

<sup>141</sup> Nielsen, “Computer & Mobile Panel,” accessed Mar. 7, 2024, <https://computermobilepanel.nielsen.com/ui/US/en/sdp/landing>.

ATTORNEY EYES' ONLY

month.<sup>142</sup> In 2024, the panel offers up to \$60 a year, or \$5 per month, for installing its tracking app on a mobile device and enters its participants into a \$500 monthly sweepstakes for installing tracking software on participants' computers.<sup>143</sup> Registering for the panel may involve providing personal identifying information, including name, address, email and other personal, demographic information and unique identifiers as well as behavior or preference data. The software collects data on website activity, online services, device information including IP address, location information, and files received, uploaded, or downloaded.<sup>144</sup> On the Google Play website, Google shows Nielsen Meter Companion has more than 50,000 downloads and the Nielsen Mobile App has more than 1,000,000 downloads.<sup>145</sup>

95. The benefit to individuals of releasing their personal information to this company is for a fixed monthly amount that does not vary between participants. The data collected by Nielsen appear to overlap with that collected by TikTok through the TikTok Pixel and Events API.

### V.B.3. SavvyConnect

96. SavvyConnect, a desktop application launched in 2009 by SurveySavvy, is an online survey platform that conducts behavioral market research while users browse the internet.<sup>146</sup> SavvyConnect currently pays \$3 per device per month to install and activate the software on a computer, phone, or tablet to collect data from users' devices while browsing the web.<sup>147</sup> This amount is down from the \$5 monthly amount per device offered in 2020 and through

---

<sup>142</sup> R.J. Weiss, "Nielsen Computer and Mobile Panel Review," The Ways To Wealth, accessed Mar. 4, 2024, <https://www.thewaystowealth.com/reviews/nielsen-computer-and-mobile-panel-review/>.

<sup>143</sup> Nielsen, "Computer & Mobile Panel," accessed Mar. 7, 2024, <https://computermobilepanel.nielsen.com/ui/US/en/sdp/landing>.

<sup>144</sup> Nielsen, "Nielsen U.S. Panel Privacy Notice Summary," accessed June 20, 2024, <https://computermobilepanel.nielsen.com/ui/US/en/privacypolicyen.html>.

<sup>145</sup> Google Play, "Nielsen Meter Companion," accessed Sept. 17, 2024, <https://play.google.com/store/apps/details?id=com.nielsen.companionapp>; Google Play, "Nielsen Mobile App," accessed Sept. 17, 2024, <https://play.google.com/store/apps/details?id=com.nielsen.odm>. Given the large number of downloads, it is evident that this app and the presence of Nielsen apps in the marketplace is significant and lends credibility to my use of this as an appropriate market measure. I understand the Apple "App Store doesn't show an estimate of downloads like the Google Play Store does." Evan Gower, "How To View How Many Times An App Has Been Downloaded," Alphr, Apr. 30, 2021, <https://www.alphr.com/view-downloads-app/>.

<sup>146</sup> SurveySavvy, "How it Works," accessed Mar. 5, 2024, [https://www.surveysavvy.com/how\\_it\\_works](https://www.surveysavvy.com/how_it_works).

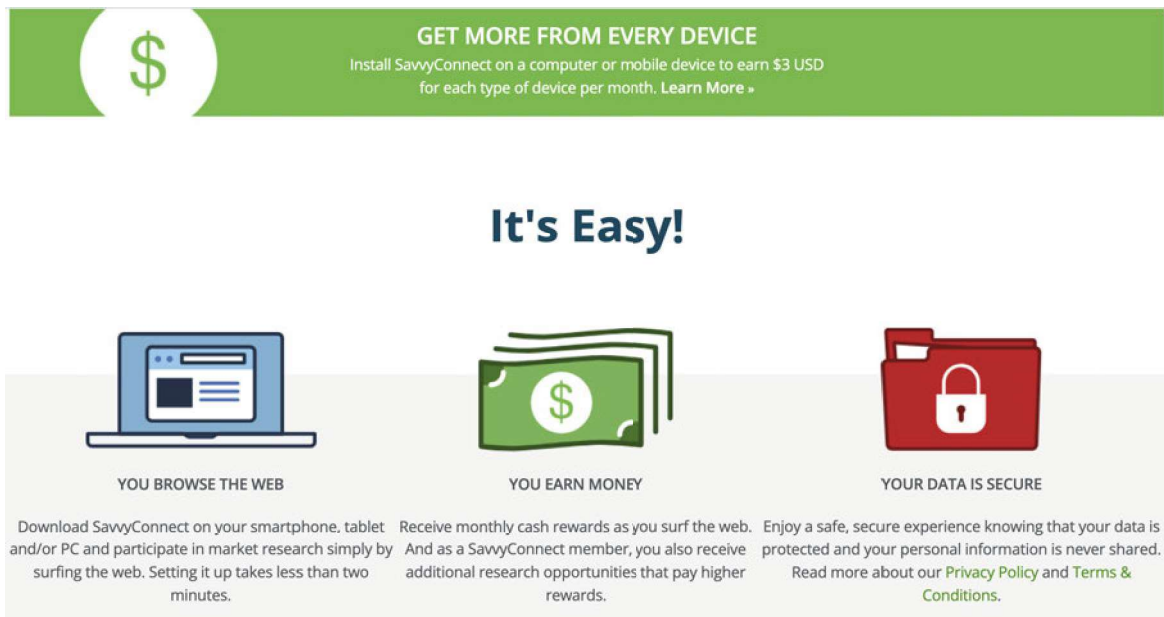
<sup>147</sup> SurveySavvy, "What is SavvyConnect?" accessed Sept. 13, 2024, <https://www.surveysavvy.com/savvyconnect>.



ATTORNEY EYES' ONLY

around December 2023.<sup>148</sup> The minimum requirement for receiving payment is active online usage 7 days in a month.<sup>149</sup> On the Google Play website, Google shows SavvyConnect has more than 100,000 downloads.<sup>150</sup>

97. Below is an example from the SavvyConnect webpage describing what information is shared and how a user makes money.



98. Some key economic factors with SavvyConnect include the following: The program pays the \$3 monthly price for each type of device.<sup>151</sup> The setup time is advertised as being quite

<sup>148</sup> SurveySavvy, "What is SavvyConnect?" May 13, 2020, image, *available at* <https://web.archive.org/web/20200513143219/https://surveysavvy.com/savvyconnect/>; SurveySavvy, "What is SavvyConnect?" June 5, 2023, image, *available at* <https://web.archive.org/web/20230605223803/https://surveysavvy.com/savvyconnect/>; SurveySavvy, "What is SavvyConnect?" Dec. 1, 2023, image, *available at* <https://web.archive.org/web/20231201102936/https://surveysavvy.com/savvyconnect/>. *See also* Mikael Moeller, "SurveySavvy Review – Is It Legit? (Yes, BUT Not Good for All)," Paid From Surveys.com, Jan. 22, 2024, <https://paidfromsurveys.com/surveysavvy-review#more-51419>.

<sup>149</sup> SurveySavvy, "SavvyConnect Monthly Participation Requirements," accessed Mar. 4, 2024, <https://surveysavvy.com/savvyconnect-requirements/>.

<sup>150</sup> Google Play, "SavvyConnect," accessed Sept. 17, 2024, <https://play.google.com/store/apps/details?id=com.luth.client>. Given the large number of downloads, it is evident that this app and the presence of SavvyConnect in the marketplace is significant and lends credibility to my use of this as an appropriate market measure. I understand the Apple "App Store doesn't show an estimate of downloads like the Google Play Store does." Evan Gower, "How To View How Many Times An App Has Been Downloaded," Alphr, Apr. 30, 2021, <https://www.alphr.com/view-downloads-app/>.

<sup>151</sup> "So, if you have a phone, a desktop, and a tablet, you can earn \$12 per month without doing anything." Mikael Moeller, "SurveySavvy Review – Is It Legit? (Yes, BUT Not Good for All)," Paid From Surveys.com, Jan. 22, 2024, <https://paidfromsurveys.com/surveysavvy-review#more-51419>.

ATTORNEY EYES' ONLY

low, at less than two minutes. All participants have to do is “surf the web” to “[r]eceive monthly cash rewards.” Participants can also receive “additional research opportunities that pay higher rewards.”<sup>152</sup> SavvyConnect also states that a participant’s “personal information is never shared.”<sup>153</sup>

99. SavvyConnect is collecting browsing information from users and those users receive a uniform amount each month for allowing SavvyConnect to collect their browsing information.

**V.B.4. Reclaim**

100. Reclaim is a mobile app that allows users to control access to their data and earn money via a points system.<sup>154</sup> Each participant earns points by accepting data orders from brands interested in their Reclaim profile.<sup>155</sup> Any user can decline to share information with a particular brand or opt-out of data sharing all together.<sup>156</sup> Every 100 points are worth \$1.00 and there is no limit to how many points one can accrue.<sup>157</sup> Reclaim users can earn extra points through referrals or customer surveys.<sup>158</sup> Compensation varies based on the number of data orders a user receives, meaning there is no flat rate for data sharing.<sup>159</sup> Reclaim previously offered weekly passive paychecks before shifting to data orders,<sup>160</sup> where users

---

<sup>152</sup> SurveySavvy, “What is SavvyConnect?” accessed June 13, 2024, <https://www.surveysavvy.com/savvyconnect>.

<sup>153</sup> SurveySavvy, “What is SavvyConnect?” accessed June 13, 2024, <https://www.surveysavvy.com/savvyconnect>.

<sup>154</sup> Neil Sweeney, “Welcome to Reclaim,” Reclaim, Sept. 8, 2021, <https://www.reclaimyours.com/learn/welcome-to-reclaim>. *See also* Reclaim, “How do points work?” accessed Sept. 10, 2024, <https://help.reclaimyours.com/en/articles/4937681-how-do-points-work>.

<sup>155</sup> Reclaim, “What is a data order?” accessed Sept. 10, 2024, <https://help.reclaimyours.com/en/articles/7971152-what-is-a-data-order>; Reclaim, “What is the best way to be eligible for more orders?” accessed Sept. 11, 2024, <https://help.reclaimyours.com/en/articles/7971171-what-is-the-best-way-to-be-eligible-for-more-orders>.

<sup>156</sup> Reclaim, “Can I pick and choose what I share with Reclaim?” accessed Sept. 11, 2024, <https://help.reclaimyours.com/en/articles/5115756-can-i-pick-and-choose-what-i-share-with-reclaim>; Reclaim, “Reclaim’s Notice of Financial Incentive,” Feb. 27, 2022, <https://www.reclaimyours.com/notice-of-incentive>.

<sup>157</sup> Reclaim, “How do points work?” accessed Sept. 10, 2024, <https://help.reclaimyours.com/en/articles/4937681-how-do-points-work>; Marla, in chat response to “Is there a maximum number of points a person can earn in a day or month?” Reclaim, Sept. 11, 2024.

<sup>158</sup> Reclaim, “How does Reclaim’s Refer-a-Friend program work?” accessed Sept. 10, 2024, <https://help.reclaimyours.com/en/articles/4936226-how-does-reclaim-s-refer-a-friend-program-work>; Reclaim, “What is the difference between an order and a poll?” accessed Sept. 11, 2024, <https://help.reclaimyours.com/en/articles/7971183-what-is-the-difference-between-an-order-and-a-poll>.

<sup>159</sup> Marla, in chat response to “Is there a flat rate for providing data to Reclaim?” Reclaim, Sept. 11, 2024.

<sup>160</sup> Reclaim, “Are orders replacing the paycheck?” accessed Sept. 11, 2024, <https://help.reclaimyours.com/en/articles/7971172-are-orders-replacing-the-paycheck>.

ATTORNEY EYES' ONLY

reported earnings of up to \$2 per month.<sup>161</sup> On the Google Play website, Google shows Reklaim has more than 100,000 downloads.<sup>162</sup>

101. In addition to the user profile and device information, Reklaim automatically collects:

Metadata and analytics with your use of our Services, including IP address, device information, date/time of visits, new or returning visits, products viewed, page response times, URL clickstreams, how long you stay on our pages, and what you do on those pages.

Use cookies, pixel tags, application programming interfaces (API), software development kits (SDK), and similar tracking technologies to collect additional information automatically as you interact with the Services and personalize your experience with our Services.<sup>163</sup>

102. Although many categories of information collected by Reklaim overlap with the information TikTok collects, multiple layers of user input and consent make Reklaim a meaningfully different service. Unlike uniform compensation offered by Ipsos, Nielsen, and SavvyConnect, payouts from Reklaim depend on the demand for a particular user's data.

### **V.C. Summary of Market Measures and Finding of the Economic Value of Non-TikTok Users Data on a Per Month Basis**

103. For the market measures discussed above, the market values for Ipsos Screenwise, Nielsen, and SavvyConnect are uniform per user regardless of the total amount of data collected. This is true for both the price premiums charged to consumers when restricting the collection and/or use of their data as well as the prices paid to consumers in exchange for collecting data. The AT&T price premium example and Meta privacy fee in Europe involve market measures where companies charge users for *not* collecting and/or utilizing their data. Although these two real-world circumstances are informative, I find that the more relevant

---

<sup>161</sup> Mikael Moeller, "Reklaim Review – Legit or Scam? (Full Details Revealed)," *PaidFromSurveys.com*, Sept. 25, 2023, <https://paidfromsurveys.com/reklaim-review>; Gary Teleky, "Reklaim Review: Get Paid to Hand Over Personal Information?" Sept. 3, 2022, <https://monetatic.ca/reklaim-review/>.

<sup>162</sup> Google Play, "Reklaim," accessed Sept. 17, 2024, [https://play.google.com/store/apps/details?id=com.killi\\_app](https://play.google.com/store/apps/details?id=com.killi_app). Given the large number of downloads, it is evident that this app and the presence of Reklaim in the marketplace is significant and lends credibility to my use of this as an appropriate market measure. I understand the Apple "App Store doesn't show an estimate of downloads like the Google Play Store does." Evan Gower, "How To View How Many Times An App Has Been Downloaded," Alphr, Apr. 30, 2021, <https://www.alphr.com/view-downloads-app/>.

<sup>163</sup> Reklaim, "Privacy Policy" June 14, 2024, <https://www.reklaimyours.com/privacy-policy>.

## ATTORNEY EYES' ONLY

comparisons for the allegations in this matter are to focus on the market measures where companies affirmatively pay users for their data (i.e., Screenwise, Nielsen, SavvyConnect, and Reklam).

104. Further evidence of the relevance of these market measures comes from consistency between the program vendors' use and Defendants' use of the data collected. For example, SavvyConnect explains that it rewards users for online data that it then uses to understand trends in online behavior. [REDACTED]

[REDACTED] 164

105. **Figure 9** includes a summary of the market measures discussed above and the amounts received by the program participants. The Screenwise, Nielsen, and SavvyConnect programs all provide payment to individuals in exchange for their browsing data. The Nielsen program and select Screenwise programs also include collection of device activity data (e.g., app usage, calling). The table below shows how the inclusion of device activity may impact the price program participants receive.

**Figure 9: Summary of Data Value Market Measures<sup>165</sup>**

Program	Year	Monthly Reward	Type of Data Collected
Screenwise	2020	\$4.33	Browsing data
	Unknown	\$3.00	Browsing data
	2023	\$8.67	Browsing data and device activity
Nielsen	2023	\$4.17	Browsing data and device activity
	2024	\$5.00	Browsing data and device activity
SavvyConnect	2020	\$5.00	Browsing data
	6/2023	\$5.00	Browsing data
	12/2023	\$3.00	Browsing data
	2024	\$3.00	Browsing data
Reklam	2023	\$2.00	Browsing data
	2024	Varies	Browsing data

<sup>164</sup> Defendants' Amended Responses and Objections to Plaintiff's Second Set of Interrogatories (Nos. 3–14), Apr. 16, 2024, pp. 53–59.

<sup>165</sup> The sources for these can be found in **Sections V.B.1–V.B.4** but are repeated below. I only include values as of 2020. Not all rewards were listed as monthly amounts, instead using either weekly or annual time periods. The monthly equivalent amount was calculated for those rewards.

cobaltorange, "Does anyone still do Screenwise Panel?" Reddit, Sept. 20, 2020, [https://www.reddit.com/r/beermoney/comments/iwijxm/does\\_anyone\\_still\\_do\\_screenwise\\_panel/?rdt=38358](https://www.reddit.com/r/beermoney/comments/iwijxm/does_anyone_still_do_screenwise_panel/?rdt=38358); Tom Nathaniel, "Screenwise Meter Panel Review: Money for Nothing?" LushDollar.com, Aug. 12, 2020,

ATTORNEY EYES' ONLY

106. These programs reflect the value of obtaining some, but not necessarily all, of a consumer's online data. The monthly payment for Screenwise, Nielsen, and SavvyConnect is not a function of time spent online or number of pages visited. For example, SavvyConnect explains that to qualify for payment, the individual needs only to be active at least 7 days a month.<sup>166</sup> Therefore, someone online for 7 days, 20 days, or 30 days would qualify for the same payment. Further, there are no restrictions that I have seen regarding the daily browsing required to obtain credit for one of those seven days.<sup>167</sup> In addition, I understand participants in the Screenwise panel and SavvyConnect may temporarily pause the data collection and not impact the payment received.<sup>168</sup> Also, given the payment is per device, individuals may opt to use an alternative device for select online activity, and still meet the minimum activity for payment. This economic evidence indicates that the available market measures demonstrate that the value paid for web traffic is not tied to, or a function of, a specific scale, scope, or data collection quantity.

---

<https://lushdollar.com/the-screenwise-meter-panel/>; The Penny Hoarder, "How to Make \$345/Year By Installing These 3 Apps," Sept. 11, 2023, accessed Mar. 1, 2024, <https://www.thepennyhoarder.com/make-money/how-to-make-295year-by-installing-these-2-apps/>; *Rodriguez et al., v. Google LLC*, Case No. 3:20-cv-04688-RS (DI 364, Exhibit 23), Expert Report of Michael J. Lasinski, Feb. 20, 2023, p. 51; SurveySavvy, "What is SavvyConnect?" May 13, 2020, image, available at <https://web.archive.org/web/20200513143219/https://surveysavvy.com/savvyconnect/>; SurveySavvy, "What is SavvyConnect?" June 5, 2023, image, available at <https://web.archive.org/web/20230605223803/https://surveysavvy.com/savvyconnect/>; SurveySavvy, "What is SavvyConnect?" Dec. 1, 2023, image, available at <https://web.archive.org/web/20231201102936/https://surveysavvy.com/savvyconnect/>; SurveySavvy, "What is SavvyConnect?" accessed June 13, 2024, <https://www.surveysavvy.com/savvyconnect/>; R.J. Weiss, "Nielsen Computer and Mobile Panel Review," The Ways To Wealth, accessed Mar. 4, 2024, <https://www.thewaystowealth.com/reviews/nielsen-computer-and-mobile-panel-review/>; Nielsen, "Computer & Mobile Panel," accessed Mar. 7, 2024, <https://computerandmobilepanel.nielsen.com/ui/US/en/sdp/landing>; Marla, in chat response to "Is there a maximum number of points a person can earn in a day or month?" Reklaim, Sept. 11, 2024; Reklaim, "Are orders replacing the paycheck?" accessed Sept. 11, 2024, <https://help.reklaimyours.com/en/articles/7971172-are-orders-replacing-the-paycheck>; Mikael Moeller, "Reklaim Review – Legit or Scam? (Full Details Revealed)," PaidFromSurveys.com, Sept. 25, 2023, accessed Sept. 11, 2024, <https://paidfromsurveys.com/reklaim-review>; Gary Teleky, "Reklaim Review: Get Paid to Hand Over Personal Information?" Sept. 3, 2022, accessed Sept. 11, 2024, <https://monetaric.ca/reklaim-review/>

<sup>166</sup> SurveySavvy, "SavvyConnect Monthly Participation Requirements" accessed Mar. 7, 2024, <https://surveysavvy.com/savvyconnect-requirements/>.

<sup>167</sup> In other words, I understand a participant that visits a single webpage for seven days, would be treated similarly as someone who visits several hundred webpages for the same seven days (or even thirty days).

<sup>168</sup> For example, Ipsos notes "[p]anelists can use a non-metered device (or pause metering temporarily) when reading or entering personal information or using messaging services." Ipsos, "Google Panel Privacy Policy," Dec. 28, 2022, <https://screenwisepanel.com/google-panel-privacy-policy>. From SavvyConnect, "Our PC/MCac software respects Private Browsing modes. While enabled, no data is collected from the current browsing session. However, please note that extensive use of the private browsing modes may affect your participation status within certain research studies." SurveySavvy, "SavvyConnect FAQs," accessed June 18, 2024, <https://surveysavvy.com/savvyconnect-faqs/>.

ATTORNEY EYES' ONLY

107. The TikTok SDK, as alleged, collects browsing data.<sup>169</sup> [REDACTED]  
[REDACTED]<sup>170</sup> I understand website visitors do not have the option of blocking or disabling the TikTok Pixel from certain websites that they want to visit, the way users can turn off or avoid the Screenwise panel or SavvyConnect app. Given the consistency of the purpose of the TikTok SDK and the market measure programs, the fact that the market measures reflect collection of some but not necessarily all browsing data, and that users participate in the data collection programs of Screenwise and SavvyConnect, I conclude that the market value of the Plaintiff data collected by the TikTok SDK is most consistent and economically comparable with the SavvyConnect and Screenwise programs.
108. The steps and analysis I have laid out above describe the methodology I assess is appropriate in studying market measures relevant for Plaintiffs' allegations in this matter and the Plaintiff data that Defendants collect and/or use. I conclude, based on the information available at this stage of the case, that a \$3 monthly market measure for a website visitor's browsing data is appropriate as restitutionary damages to non-TikTok users. This market value aligns with the most recent SavvyConnect metric as well as the Screenwise value.<sup>171</sup>

---

<sup>169</sup> Shafiq Declaration, Sections IV and V; Conversation with Dr. Shafiq; Shafiq Reply Declaration; Shafiq Report.

<sup>170</sup> [REDACTED] (TIKTOK-BG-000003014 at 3033). *See also* Deposition of Lizzie Li, June 5, 2024, pp. 102–103.

<sup>171</sup> As an alternative and more conservative calculation, I also consider an additional metric where an allocation is applied to the monthly market measure. The market measure is a fixed payment amount per month for a user despite variation in the amount of data collected. In other words, Screenwise and SavvyConnect can collect data from any and all websites visited by a participant (assuming the meter is not turned off or an alternative browser is not used when browsing, for example, sensitive information). However, TikTok only has the TikTok Pixel and Events API on a share of all websites. Therefore, to account for one aspect of the potential footprint of Plaintiff data that could be collected by TikTok, an allocation may be applied based on the fraction of websites that have the TikTok SDK.

I have identified two studies performed by software privacy and security firms Feroot and LOKKER. Feroot concluded that the TikTok Pixel was present on 7.41 percent of websites studied over the period January and February 2023. The LOKKER study, published in March 2024, found that 12 percent of websites across all industries have the TikTok Pixel. Both LOKKER and Feroot find the TikTok Pixel has a material presence on the internet. In addition, the studies show growth in the presence of the TikTok Pixel, which is consistent with Defendants' documents.

Using the average of these two values as my allocation factor (9.7 percent), I can then adjust restitutionary damages by an apportionment factor. Note that this value is at the lower end of the fraction of 10 percent to 12 percent described in the Schneider Report. Ultimately, it is my economic opinion that the scale and scope of websites using the TikTok Pixel and Events API, the variation in amount of online data that leads to the same payment under the market measures, and the ability to pause the collection of data under programs corresponding to the market measures, as well as the goal of the Ipsos Screenwise Panel to be nationally representative, leads to an elimination of the need for this apportionment factor.

I believe my independent finding in this respect is also consistent with the opinions provided by Bruce Schneider. For



ATTORNEY EYES' ONLY

**VI. CALCULATING THE TOTAL NUMBER OF NON-TIKTOK USERS, MONTHS OF DATA COLLECTION, AND CONSIDERATION OF UNJUST ENRICHMENT**

109. In this section, I will calculate the total number of non-TikTok users and the number of months of data collection during the relevant period. This will then allow me to provide a demonstration of the unjust enrichment that would be appropriate for each non-TikTok user to receive related to damages. The general framework includes identifying the portion of U.S. population that includes active internet users (age 13 and older), and removing from that group individuals that are or have been TikTok account holders.
110. The first step starts with the total U.S. population, and identifies the portion of internet users. This step is applied to account for the minimum threshold to qualify for the market measures (e.g., although it is low frequency, at least one of the market measures has minimum online activity requirements for payment at 7 days of activity per month for SavvyConnect). For this step, I account for variances by age. Given limitations on statistics regarding internet use for individuals under the age of 13, I have conservatively removed them from the analysis. Following these steps, it is determined there are around 260 million individuals in the U.S. for the years 2022–2024 that are active internet users. The next step is to remove TikTok account holders/users. This step does not use historical measures of the number of TikTok account holders, but rather, it needs the most current measurement of the number of U.S. TikTok users. According to a recent court filing in another matter from May 7, 2024, TikTok says it has 170 million U.S. users.<sup>172</sup> It is unclear if this number reported from

---

example, Mr. Schneier states “TikTok has constructed an essentially inescapable infrastructure for gathering a vast scope of information about the activity of both TikTok users and non-TikTok users on non-TikTok websites.” He goes on to state: “it is almost impossible for anyone, including non-TikTok users, to avoid TikTok’s Pixel or Events API.”

See, e.g., Feroot, “Beware of Pixels & Trackers,” 2023 Feroot Client-Side Security Report, Apr. 5, 2023; LOKKER, “Website Privacy and Compliance Challenges: Quantifying Website Privacy Risks,” Mar. 2024, *available at* [https://lokker.com/wp-content/uploads/2024/04/LOKKER\\_Online-Data-Privacy-Report\\_032024-2.pdf](https://lokker.com/wp-content/uploads/2024/04/LOKKER_Online-Data-Privacy-Report_032024-2.pdf); [REDACTED] (TIKTOK-BG-000125306–381 at 350); TikTok, [REDACTED] (TIKTOK-BG-000003014 at 3016); Expert Report of Bruce Schneier, Sept. 20, 2024, Sections I and II.

<sup>172</sup> *TikTok and ByteDance v. Merrick Garland*, Case No. 24-1113, Petition for Review of Constitutionality of the Protecting Americans from Foreign Adversary Controlled Applications Act, May, 7, 2024, p. 2 (noting 170 million users in the U.S.). This number is of the approximate magnitude as Mr. Schneier describes in his report of more than 150 million installations of the TikTok app in the U.S. Schneier Report, Section VII.6.

ATTORNEY EYES' ONLY

TikTok includes users who are no longer active on the app.<sup>173</sup> Subtracting this count from the 260 million U.S. internet users yields 90 million U.S. internet users who have not had a TikTok account. In other words, approximately 35 percent ( $= 90 \div 260$ ) of U.S. internet users have not had a TikTok account. See **Figure 10**.

---

<sup>173</sup> Should TikTok provide additional context for this number, or an understanding of its retention rate of users, this analysis may need to be updated.



## ATTORNEY EYES' ONLY

**Figure 10: Analysis of U.S. Population, Internet Use, and TikTok Users, 2022–2024**<sup>174</sup>

	Note	2022	2023	2024
<u>U.S. Population</u>				
Age 18 and up	[a1]	260,046,087	262,083,034	267,598,751
Age 13–17	[a2]	21,907,573	21,860,667	22,320,740
Age 0–12	[a3]	51,317,751	50,971,194	52,043,918
Total	[a]	333,271,411	334,914,895	341,963,408
<u>Internet Use</u>				
Percentage of Adults Who Go Online	[b]	89%	93%	93%
Percentage of Age 13–17 Who Go Online	[c]	97%	96%	96%
<u>Internet Users</u>				
Adult Internet Users	[d] = [a1] × [b]	231,441,017	243,737,222	248,866,838
Age 13–17 Internet Users	[e] = [a2] × [c]	21,250,346	20,986,240	21,427,910
Total Internet Users	[f] = [d] + [e]	252,691,363	264,723,462	270,294,748
<u>Current U.S. TikTok Users (as of May 7, 2024)</u>				
	[g]		170,000,000	
Internet Users Who Don't Use TikTok	[h] = [f] – [g]	82,691,363	94,723,462	100,294,748
Percentage of U.S. Non-TikTok Users	[i] = [h] ÷ [f]	33%	36%	37%

Notes:

The internet use survey questions differed between adults and those age 13–17. For adults, I utilize the categories of being online at least several times per week. For those age 13–17, I utilize the categories of being online at least once per day. For 2024, the population subcategories are estimated using the percent change in total population.

Adult internet use numbers for 2022 and 2024 are based on 2021 and 2023 surveys, respectively. Teen internet use for 2024 is based on 2023 survey data.

Sources:

[a] Census Bureau Data, "Population Estimates By Age," accessed June 14, 2024, <https://www2.census.gov/programs-surveys/popest/datasets/2020-2023/national/asrh/nc-est2023-agesex-res.csv>; Census Bureau Data, "International Database," accessed Sept. 13, 2024, [https://www.census.gov/data-tools/demo/ldb/#/table?COUNTRY\\_YR\\_ANIM=2021&menu=tableViz&COUNTRY\\_YEAR=2021&TREND\\_RANGE=1950,2100&TREND\\_STEP=10&TREND\\_ADD\\_YRS=&POP\\_YEARS=2024&CCODE=US&CCODE\\_SINGLE=US&popPages=PYRAMID&ageGroup=1Y](https://www.census.gov/data-tools/demo/ldb/#/table?COUNTRY_YR_ANIM=2021&menu=tableViz&COUNTRY_YEAR=2021&TREND_RANGE=1950,2100&TREND_STEP=10&TREND_ADD_YRS=&POP_YEARS=2024&CCODE=US&CCODE_SINGLE=US&popPages=PYRAMID&ageGroup=1Y).

[b] Sara Atske and Andrew Perrin, "About three-in-ten U.S. adults say they are 'almost constantly' online," Pew Research Center, Mar. 26, 2021, <https://www.pewresearch.org/short-reads/2021/03/26/about-three-in-ten-u-s-adults-say-they-are-almost-constantly-online/>; Risa Gelles-Watnick, "Americans' Use of Mobile Technology and Home Broadband," Jan. 31, 2024, <https://www.pewresearch.org/internet/2024/01/31/americans-use-of-mobile-technology-and-home-broadband/>.

[c] Monica Anderson, Michelle Faverio, and Jeffrey Gottfried, "Teens, Social Media and Technology 2023," Pew Research Center, Dec. 11, 2023, <https://www.pewresearch.org/internet/2023/12/11/teens-social-media-and-technology-2023/>.

[g] *TikTok and ByteDance v. Merrick Garland*, Case No. 24-1113, Petition for Review of Constitutionality of the Protecting Americans from Foreign Adversary Controlled Applications Act, May, 7, 2024, p. 2.

<sup>174</sup> See backup production for underlying data from Census Bureau.

## ATTORNEY EYES' ONLY

111. The values above were adjusted for online use, so the values of internet users who don't use TikTok need to only be multiplied by the number of months in the Relevant Period. The cumulative number of non-TikTok user-months during the Relevant Period can then be calculated.

**Figure 11: Cumulative non-TikTok User-Months**

	Note	2022	2023	2024
Internet Users Who Don't Use TikTok	[a]	82,691,363	94,723,462	100,294,748
Number of Months in Relevant Period	[b]	10	12	9
Non-TikTok User-Months	[c] = [a] × [b]	826,913,630	1,136,681,544	902,652,732
<b>Cumulative non-TikTok User-Months</b>	<b>[d] = sum(c)</b>		<b>2,866,247,906</b>	

112. Now that I have the cumulative non-TikTok user-months, I can incorporate my analysis of TikTok's unjust enrichment to determine the pro rata share of unjust enrichment revenues for a single Plaintiff. I first find that the unjust enrichment revenues value of \$946,593,102 found in **Figure 5** is likely to be the best approximation of total U.S. revenues attributable to the TikTok Pixel and Events API.<sup>175</sup> I then calculate that the pro rata share of unjust enrichment revenues is the number of months that a Plaintiff contributed to TikTok's unjust enrichment revenues multiplied by the fraction of revenues to cumulative non-TikTok user-months. In other words:

$$\text{Pro rata share} = \# \text{ of months of data collected} \times \$946,593,102 \div 2,866,247,906$$

## VII. ASSESSMENT OF STATUTORY DAMAGES

113. I have also been requested by counsel to consider statutory damages. I understand California Penal Code § 637.2 sets \$5,000 per violation.<sup>176</sup> I understand the ECPA establishes statutory damages of the greater of \$100 per day of violation, or \$10,000, and there is a two-year statute of limitations.<sup>177</sup>

<sup>175</sup> This is the revenue value that combines a value at the start of the Relevant Period (the "Low" estimate), and controls for a long cumulative period of time (the "High" estimate) where TikTok's revenues were evolving over the 31-month period of the Relevant Period. See **Figure 5**, *supra*.

<sup>176</sup> Complaint, p. 53.

<sup>177</sup> 18 U.S. Code § 2520(c).

ATTORNEY EYES' ONLY

114. A starting point for the definition of a violation could be the number of Plaintiffs (whether the case is pursued individually or on a class-wide basis). However, I understand that violation is a concept that could even be applied as broadly as every time the Pixel fires for a website visited by a Plaintiff.

## VIII. ECONOMIC DAMAGES FOR PLAINTIFFS

115. In this section, I will address economic damages for the three Plaintiffs.

### VIII.A. Economic Damages for Bernadine Griffith

116. After reviewing her produced documents, browsing history, deposition, and declaration, I find that Ms. Griffith used the internet every month between March 2022 and September 2024, for a total of 31 months.<sup>178</sup> This is based off Ms. Griffith's assertions that she frequently uses the internet. She stated that she routinely uses Google Chrome or Microsoft Edge to browse the web, and that she uses Google several times per day.<sup>179</sup> I understand that Ms. Griffith has set up her browser to regularly delete her internet history.<sup>180</sup> As such, a review of her web data only contains a small snapshot of her full online history. What it does show is that she visited websites such as Etsy, Build-A-Bear, and Hulu, each of which have the TikTok Pixel installed.<sup>181</sup> Her Hulu watch history shows frequent use of the website from June 2023 to June 2024,<sup>182</sup> and based on her other statements, I reasonably assume that this goes back at least until March 2022.<sup>183</sup>
117. Each of these months that Ms. Griffith used the internet exceeds the minimum use threshold set by Ipsos and SavvyConnect for their programs. Ipsos simply requires its users to browse the internet on the device and does not have specific usage minimums. SavvyConnect

---

The initial complaint was filed May 26, 2023. Given that the Relevant Period starts March 2022, the statute of limitations would not be binding. Class Action Complaint, May 26, 2023.

<sup>178</sup> Although I do not have information on Ms. Griffith's internet usage from July 2024 to September 2024, I assume that her usage remains consistent from that of March 2022 to June 2024.

<sup>179</sup> Deposition of Bernadine Griffith, June 26, 2024, pp. 84–85; Declaration of Bernadine Griffith, June 21, 2024, p. 1.

<sup>180</sup> Deposition of Bernadine Griffith, June 26, 2024, p. 101.

<sup>181</sup> GRIFFITHTT002117.

<sup>182</sup> GRIFFITHTT002125–195; GRIFFITHTT002196–210.

<sup>183</sup> Deposition of Bernadine Griffith, June 26, 2024, pp. 62–63.

ATTORNEY EYES' ONLY

requires users to use the device the program is installed on for at least 7 days per month.<sup>184</sup> Ms. Griffith's stated usage well-exceeds any thresholds set by the market measures, as she has provided a list of websites that she visits daily and weekly.<sup>185</sup>

118. With respect to restitutionary damages, I find that Ms. Griffith has incurred \$93 in damages (31 months of data collection  $\times$  \$3 per month). With respect to unjust enrichment, I find that Ms. Griffith's pro rata share, utilizing the approach I describe in ¶ 112, is \$10.24 in damages (31 non-TikTok user months allocated to Ms. Griffith  $\div$  2,866,247,906 non-TikTok user months  $\times$  \$946,593,102 in TikTok's unjust enrichment).<sup>186</sup> I understand that the economic damages identified here are not inclusive of any statutory or punitive damages that might be awarded.

### VIII.B. Economic Damages for Patricia Shih

119. After reviewing her declaration, deposition, and accompanying exhibits, I find that Ms. Shih has used the internet every month between March 2022 and September 2024, for a total of 31 months.<sup>187</sup> Ms. Shih has stated that she uses an iPhone, a desktop computer referred to as a "Hackintosh," a MacBook Pro, and a Samsung Smart TV to access the internet.<sup>188</sup> I understand that Ms. Shih has produced her browsing history from two separate hard drives on her Hackintosh desktop computer which show visits to TikTok, Hulu, Etsy, and Upwork in each month between March 2023 and January 2024.<sup>189</sup> This is just one of her many devices used to browse online. Ms. Shih has also listed each of her social media accounts and noted that she uses Twitter, LinkedIn, and Reddit weekly starting prior to the Relevant

---

<sup>184</sup> SurveySavvy, "SavvyConnect Monthly Participation Requirements," accessed Sept. 13, 2024, <https://surveysavvy.com/savvyconnect-requirements/>.

<sup>185</sup> Plaintiff's Supplemental Responses to Defendants' First Set of Interrogatories (Nos. 1–12), Nov. 29, 2023, pp. 16–18.

<sup>186</sup> As noted above, the file produced within 48 hours of submitting this report indicates that the unjust enrichment value utilized here may be understated by a factor of approximately 2. See backup production. This indicates the pro rata share of unjust enrichment damages may be closer to \$20.

<sup>187</sup> Although I do not have information on Ms. Shih's internet usage from July 2024 to September 2024, I assume that her usage remains consistent from that of March 2022 to June 2024. See, e.g., Plaintiff Patricia Shih's Responses to Defendant's First Set of Interrogatories (Nos. 1–12), Dec. 4, 2023, pp. 9 and 14–16.

<sup>188</sup> Plaintiff Patricia Shih's Responses to Defendant's First Set of Interrogatories (Nos. 1–12), Dec. 4, 2023, pp. 6–7.

<sup>189</sup> It is my understanding that the produced browsing history only covers data associated with TikTok, Hulu, Etsy, and Upwork and is not a comprehensive reflection of Ms. Shih's total internet usage during the Relevant Period. See Deposition of Patricia Shih, June 27, 2024, p. 95; SHIH-GRIFFITHTT000184; SHIH-GRIFFITHTT000185.

ATTORNEY EYES' ONLY

Period.<sup>190</sup> Additionally, Ms. Shih identified the websites that she has visited regularly since March 2022, many of which she stated that she has visited “several times and more in a given month.”<sup>191</sup> Ms. Shih has also provided a list of websites she visits daily and weekly.<sup>192</sup> Each of these months that Ms. Shih has accessed the internet exceeds the minimum use threshold set by Ipsos and SavvyConnect.

120. With respect to restitutionary damages, I find that Ms. Shih has incurred \$93 in damages (31 months of data collection × \$3 per month). With respect to unjust enrichment, I find that Ms. Shih’s pro rata share, utilizing the approach I describe in ¶ 112, is \$10.24 in damages (31 non-TikTok user months allocated to Ms. Shih ÷ 2,866,247,906 non-TikTok user months × \$946,593,102 in TikTok’s unjust enrichment).<sup>193</sup> I understand that the economic damages identified here are not inclusive of any statutory or punitive damages that might be awarded.

### VIII.C. Economic Damages for Jacob Watters

121. After reviewing his produced documents, browsing history, deposition, and declaration, I find that Mr. Watters used the internet in every month between March 2022 and September 2024 for a total of 31 months.<sup>194</sup> He regularly browses the internet and mentioned that he frequently uses websites such as Facebook, YouTube, Reddit, and Instagram.<sup>195</sup> I understand that Mr. Watters has his browser set to regularly delete his history, so reviewing his browsing data gives only limited information about his web usage.<sup>196</sup> However, the available selections from his browsing history corroborates his testimony that Etsy was one of the websites that he visited multiple times throughout the Relevant Period.<sup>197</sup> Mr. Watters has

---

<sup>190</sup> Plaintiff Patricia Shih’s Responses to Defendant’s First Set of Interrogatories (Nos. 1–12), Dec. 4, 2023, p. 9.

<sup>191</sup> Plaintiff Patricia Shih’s Responses to Defendant’s First Set of Interrogatories (Nos. 1–12), Dec. 4, 2023, pp. 14–16.

<sup>192</sup> Plaintiff Patricia Shih’s Responses to Defendant’s First Set of Interrogatories (Nos. 1–12), Dec. 4, 2023, p. 9.

<sup>193</sup> As noted above, the file produced within 48 hours of submitting this report indicates that the unjust enrichment value utilized here may be understated by a factor of approximately 2. See backup production. This indicates the pro rata share of unjust enrichment damages may be closer to \$20.

<sup>194</sup> Although I do not have information on Mr. Watter’s internet usage from July 2024 to September 2024, I assume that his usage remains consistent from that of March 2022 to June 2024.

<sup>195</sup> Deposition of Jacob Watters, June 25, 2024, p. 35.

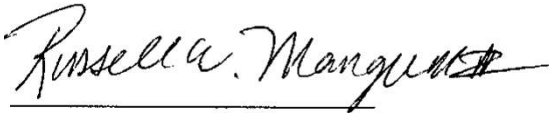
<sup>196</sup> Deposition of Jacob Watters, June 25, 2024, pp. 56–58.

<sup>197</sup> WATTERS-GRIFFITHTT000610; WATTERS-GRIFFITHTT000611; WATTERS-GRIFFITHTT000612; Deposition of Jacob Watters, June 25, 2024, pp. 65–66.

ATTORNEY EYES' ONLY

also provided a list of websites that he visits daily, weekly, and monthly.<sup>198</sup> Each of these months that Mr. Watters used the internet exceeds the minimum use threshold set by Ipsos and SavvyConnect.

122. With respect to restitutionary damages, I find that Mr. Watters has incurred \$93 in damages (31 months of data collection  $\times$  \$3 per month). With respect to unjust enrichment, I find that Mr. Watters's pro rata share, utilizing the approach I describe in ¶ 112, is \$10.24 in damages (31 non-TikTok user months allocated to Mr. Watters's  $\div$  2,866,247,906 non-TikTok user months  $\times$  \$946,593,102 in TikTok's unjust enrichment).<sup>199</sup> I understand that the economic damages identified here are not inclusive of any statutory or punitive damages that might be awarded.



Russell W. Mangum III  
September 20, 2024

---

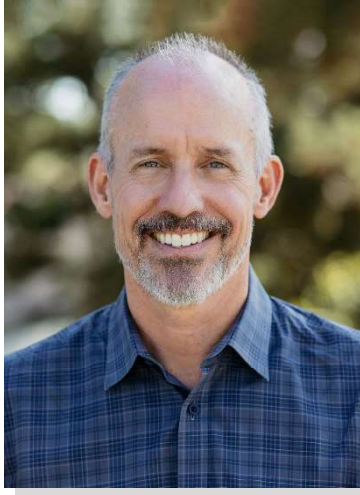
<sup>198</sup> Plaintiff Jacob Watters's Responses to Defendants' First Set of Interrogatories (Nos. 1–12), Dec. 4, 2023, pp. 13–14.

<sup>199</sup> As noted above, the file produced within 48 hours of submitting this report indicates that the unjust enrichment value utilized here may be understated by a factor of approximately 2. See backup production. This indicates the pro rata share of unjust enrichment damages may be closer to \$20.



# APPENDIX 1

## RUSSELL W. MANGUM III



4 Park Plaza  
Suite 1930  
Irvine, CA 92614

T (949) 594-1601 o  
T (714) 714-6529 m  
mangum@cirqueanalytics.com

### CURRENT POSITION

---

Executive Vice President, Cirque Analytics; 2021–present

### EDUCATION

---

Ph.D., Economics, University of Southern California, 1995

M.A., Economics, University of Southern California, 1992

M.A., Christian Apologetics (highest honors) Biola University, 2023

B.A., Economics (honors), Calif. State University, Fullerton, 1988

### SPECIALIZED EXPERIENCE, RESEARCH, OR INTEREST

---

Antitrust; Commercial Disputes; Intellectual Property; Statistics and Econometrics, Valuation

### PAST POSITIONS

---

2013–2022	Professor, Economics, Concordia University Irvine (retired)	Irvine, CA
2021	Visiting Researcher, Univ of Winchester, Sch of Bus, Law, and Tech	Winchester, UK
2007–2021	Senior Vice President, Nathan Associates Inc.	Irvine, CA
2002–2012	Associate Adjunct Professor, Economics, Univ of Southern California	Los Angeles, CA
2001–2007	Vice President, Analysis Group, Inc.	Los Angeles, CA
2001	Manager, PricewaterhouseCoopers, Financial Advisory Services	Los Angeles, CA
1998–2001	Managing Associate, Nathan Associates Inc.	Arlington, VA
1998–2000	Adjunct Professor, Economics, Johns Hopkins University	Washington, DC
1995–1998	Economist, U.S. Federal Trade Commission	Washington, DC

### COURSES TAUGHT

---

Principles and Intermediate Economics, Managerial Economics, Statistics and Econometrics, Finance and Financial Markets, Environmental Economics, Business Info. Technology, Advanced Topics in Economics

### EXPERIENCE SUMMARY

---

Dr. Mangum has over 30 years of experience in economic analysis, research, and teaching. His consulting practice centers on economic analysis and damages in matters related to IP and technology, antitrust, and complex commercial disputes, with particular application to class certification, statistical analysis, and use of survey data. Dr. Mangum's experience as an expert is extensive, with testimony in over 125 matters before local, state, and federal courts. Dr. Mangum has taught graduate and undergraduate courses in economics, statistics, finance, and econometrics at several universities, including Johns Hopkins, USC, Pepperdine and Concordia University Irvine. Dr. Mangum's career has included employment by Nathan Associates, Inc., Analysis Group, PricewaterhouseCoopers, and The US Federal Trade Commission.



## PROFESSIONAL EXPERIENCE

---

### *Intellectual Property*

Dr. Mangum has substantial experience in the area of intellectual property damages, including claims related to infringement of patents; FRAND licensing commitments; patent pools; copyrights; and trademarks; as well as theft of trade secrets; false designation of origin; and false advertising. The case contexts in which Dr. Mangum has performed these analyses include:

- Patent infringement and disputes related to:
  - Computer, electronics, and telecommunication industry:
    - Cellular communication network technology;
    - Modem communication devices;
    - Wireless communication network devices (routers, cards, including under FRAND licensing commitments);
    - Handheld device navigation applications;
    - NIC hardware and chipsets;
    - Semiconductors;
    - Webswitching and IP router network hardware;
    - Wired and wireless portable electronic temperature sensor devices;
    - Electronic eReader devices;
    - Digital TV Tuners under FRAND licensing commitments;
    - Automated lip-sync animation used in video games;
    - Data encryption devices.
    - VoIP network telephony services.
    - Video streaming services and applications.
  - Medical devices:
    - Artificial vertebral disc implants;
    - Trocar seals for laparoscopic surgery;
    - Spinal fusion implants;
    - Breast biopsy devices;
    - Remote medical information monitoring technology;
    - Intraarterial guidewire and embolic filter devices.
  - Energy
    - Specialized valves used in oil refining;
    - Electric utility management systems;
    - Wide-area real time phasor measurement and monitoring.
  - Food and agriculture:
    - Additive-infused confections;



- Nutritional supplements;
- New variety of late ripening white grapes;
- Structures and methods utilized in the growing of grapes and raisins;
- Cold extraction coffee processes.
- Business software
  - eProcurement;
  - Business intelligence;
  - Design and simulation;
  - Call routing software;
  - Computer tracking;
  - Program and application management;
- Clothing and clothing design
  - Padded athletic shirts/pants; shoes; headwear; accessories;
- Miscellaneous
  - Electronic nicotine delivery systems (NDS)
  - Personal watercraft devices and accessories
  - Consumer advertising design via use of digital media
  - Automated stapling machines used in bed manufacturing
  - Specialized hardware and control systems used in high-rise elevators
  - Electronic exchange systems for trading of commodities futures contracts
  - Electronic data management system used in public transportation projects
  - Document and print inspection systems
- Trademark, trade dress, or copyright infringement related to:
  - Environmental Cleanup/Transport/Disposal Services
  - IT Network equipment (transceivers and switches);
  - Sponsorship with motorsports, automotive repair tools and devices, beverages and snacks, and apparel;
  - Banking services;
  - Skincare and cosmetics;
  - Real estate property acquisition services;
  - Online dining reservation and payment services;
  - Internet search engine terms related to retail sales of food and arranged food products;
  - Enterprise Resource Planning (ERP) software;
  - Veterinary Teleradiology (online/internet) Services;
  - Devices and software for online mobile device data extraction and IT network devices;

- Clothing, shoes, and jewelry;
- Advertising and marketing through wireless mobile communications;
- Motion picture trademarks in the manufacture of clothing;
- Furniture products (mechanized and non-mechanized);
- Portable combustion engines and portable air compressors
- Infant care products;
- Homeopathic products;
- Postal measuring products;
- Scented candle products;
- Children's toys;
- Art and art exhibits
- Design plans for a theme amusement park.
- Theft of trade secrets related to:
  - Neuroendovascular coils and catheters;
  - Cold extraction coffee processes
  - Electronic mechanisms for payment processing;
  - Technical documents, Product features, customer data, and marketing methods/models related to Systems for General Floor Hospital Monitoring of patient vital statistics;
  - Training methods, pricing models, and customer status databases related to Enterprise Resource Planning (ERP) software;
  - Customer data and information, and pricing models related to employee pension and benefits insurance brokerage services;
  - Government contracted research into laser vibrometry;
  - Devices and software for mobile device data extraction;
  - IT system design and implementation for the US defense industry;
  - Electronic engineering and CAD packages used in US naval warcraft architecture;
  - Methods for mathematical simulations for the pricing of mortgage backed securities;
  - Soy coffee alternative products;
  - Design, development, marketing, and manufacturing of toys;
  - Computer game accessories.
- False advertising, false designation of origin, or unauthorized use of likeness related to:
  - Chemical dependence treatment services;
  - Real estate property acquisition services;
  - Security monitoring systems and services;
  - Consumer appliances;
  - Medical data printer systems;

- Furniture products;
- Composed music and lyrics used in television commercials;
- Restaurant meals and shopping services;
- Internet advertising services via advertorial placement on publishers' websites;
- Nutritional supplements and beverages;
- Orthodontic and Dental devices and services;

#### **Data Storage/Unauthorized Usage/Breaches**

- Contractual dispute of data storage practices (data storage services industry)
- Contractual dispute of data collection and use practices (internet browsing services industry)
- Improper/fraudulent data security measures and resulting data breach (non-profit data maximization services industry)
- Improper/fraudulent data security measures and resulting data breach (file-sharing and data transfer services industry)
- Unauthorized capture of personal data (internet browsing services and social media services industry)

#### **Competition/Antitrust**

Dr. Mangum has substantial experience in the area of competition and antitrust, including analyses of relevant product and geographic markets, market power, monopolization, and likelihood of monopolization from impending events. These analyses usually include statistical and econometric analysis of market data to identify the extent of competition, and the magnitude of competition. The case contexts in which Dr. Mangum has performed these analyses include:

- Evaluated common impact and estimated damages, for direct and indirect purchasers, from price fixing and other conspiracies, including the markets for commercial tissue paper, bulk vitamins, high-end automobiles, ready mix concrete, consumer apparel, Korean noodles, packaged seafood, meat products, interior molded doors, airline travel, and pharmaceuticals.
- Evaluation of alleged competitive foreclosure in the market for sleep apnea products, including relevant markets, market power, and lost profits damages.
- Evaluation of alleged price discrimination across dealers of hardscape building materials.
- Evaluation of antitrust claims and affirmative defenses of patent misuse related to required terms in patent license programs for flash memory semiconductors and systems.
- Evaluation of market segments, market channels, and cost pass-through in the market for DRAM-containing products and NFL brand apparel.
- Estimation of damages related to:
  - A conspiracy to boycott developments in DRAM packaging;
  - Foreclosure of competition in market for footwear insoles and inserts.
- Evaluation of competitive effects of exclusive dealing clause in a franchise agreement.
- Evaluated the competitive effects of exclusive dealing policies regarding:

- Acute care hospital and physician services;
- Customer purchase data exchange related to direct mail advertising and sales;
- Free standing insert advertising (coupon) services;
- Replacement parts for 3-piece body welder systems;
- Interconnect agreements between internet backbone communication services;
- Supply of biological inputs used in creating generic biologic therapeutic treatments;
- Professional sports branded athletic apparel;
- Durable medical equipment;
- Pharmaceuticals.
- Analyzed the competitive effects from wrongful patent application and issuance (fraud on the patent office) related to processes and mechanisms for food preparation and processing.
- Analyzed the likely competitive effects of proposed mergers in various industries, including hospital services, physician services, pharmaceuticals, medical insurance, construction aggregates, supermarkets, auto parts, cable systems and programming, industrial refractories, and computer game software.

### *Commercial Disputes*

- Evaluated damages related to a data breach and the improper capture and transmission of personalized information held and maintained in commercial database(s).
- Evaluated damages related to alleged breach of contract involving collection and retention of personalized information connected to web browsing activity.
- Evaluated damages related to alleged breach of contract involving online storage agreements.
- Evaluated claims of damages related to attempted sale of cold extraction coffee company and the discovery of patents allegedly based on confidential information.
- Evaluated claims of damages related to failure to close a sale for multiple solar energy production properties/companies.
- Estimated damages in the form of lost profits from breach of contract in a services joint venture involving use of indexes and associated data for creation and analysis of international financial securitized and derivatives.
- Estimated damages in the form of disgorgement and lost company value related to brokerage services involving employee pension and benefit programs.
- Evaluated claims of replacement cost and lost profits damages related to alleged interference in the market for femtocell wireless communication products.
- Evaluated claims of damages in the form of lost profits and disgorgement of compensation and benefit from alleged unauthorized use of confidential materials in the market for government contracts for research into laser vibrometry.
- Estimated damages from employee theft of HDD computer memory products from s research/testing facility. Calculated value based on historical in-channel market price and on historical costs of manufacturing and sales.
- Evaluated claims of lost profits damages arising from alleged professional malpractice related to commercial development and land use.

- Provided statistical and data analysis of invoices for disaster recovery and construction services. Estimated lost profits related to alleged fraud, breach of contract, and tortious interference.
- Estimated damages related to alleged breaches of contract, including:
  - Contract involving the development and sale of solar power generation projects;
  - Contract involving the supply of active ingredients in nutraceuticals;
  - Non-solicitation agreement between government defense contracting companies;
  - Contract for concession services at amusement parks;
  - Contract for creation and promotion of credit reporting services;
  - Contract for supply of MLB jerseys used in creation of sports memorabilia;
  - Contract for blending and supply contracts for specialized non-dairy beverages;
  - Non-compete clauses (restaurant lease, franchising, structural steel fabrication);
  - Contract for earning and redeeming of frequent flyer miles;
  - Contract for purchase of television airtime on a local over-the-air station;
  - Contract for representation and sale of television programming;
  - Royalty contract regarding design and functionality elements use in toys;
  - Contract for technology and support from software conference bridge systems;
  - Contract for conference calling services and long-distance calls connection services.
- Estimated damages from defamation related to the launch of a clinic for medical disorders.
- Evaluated claims by the CA Coastal Commission related to lost recreational value from proposed coastal bluff seawall construction.
- Evaluated concepts and methods for calculating proceeds from a Qi Tam suit related to improper medical lab billing practices.
- Estimated damages related to Quantum Meruit claims involving use of software to manage viewing and storage of electronic medical images.

### **Employment and Labor**

- Estimated damages related to lost profits; lost company value, employee training and hiring expense, and/or disgorgement of defendant's profits in multiple cases related to the alleged breach of non-solicitation agreements and unauthorized use of confidential information by departing employees the insurance and MLM health and wellness industries.
- Estimated lost profits damages and/or disgorgement of defendant's profits in multiple cases related to the alleged breach of non-solicitation agreements and unauthorized use of confidential information involving government defense contracting companies.
- Estimated plaintiff's lost profits and disgorgement of defendant's profits related to the theft of trade secrets by departing employees in the automated emergency/disaster response industry.
- Estimated disgorgement of defendant's profits related to the theft of trade secrets by departing employees in the naval engineering industry.
- Provided statistical analysis of employee timecard and pay data to estimate instances of underpayment or missed breaks.

- Estimated lost earnings and compensation damages related to an alleged wrongful termination of an employee; evaluated lost wages/earnings, lost retirement benefits, and lost compensation through stock options.
- Estimated damages to an employee/inventor related to exclusion as an inventor from PCT applications following termination from a start-up medical devices company; evaluated the plaintiff's claims of lost share of proceeds from technology share.

### **Statistical and Econometric Analysis**

- Performed regression analysis to evaluate class-wide damages related to class certification in the context of various alleged conspiracies, in several industries and markets including:
  - Ready-mix concrete; Korean Ramen; Interior molded doors; Packaged Seafood; Trans-Pacific airline travel; Broiler chickens; Domestic airlines travel; Pork; Turkey;
- Performed regression analysis to evaluate class-wide cost pass-through in the context of multiple alleged antitrust conspiracies (including building materials, airline travel, food products, apparel, and DRAM).
- Evaluated regression and statistical analysis offered in support of damages related to an alleged breach of non-solicitation agreements and unauthorized use of confidential information by departing employees the insurance and MLM health and wellness industries.
- Evaluated regression and statistical analysis offered in support of damages and common impact in an indirect purchaser class action related to alleged false advertising for nutritional supplement beverages.
- Provided statistical analysis of employee timecard and pay data to estimate instances of underpayment or missed breaks.
- Provided sampling techniques and statistical analysis of customer service database to estimate the extent of use of an allegedly infringing feature in a commercial router.
- Evaluated sampling techniques and extrapolation estimates related to allegedly improper medical billing practices and in the context of damages related to construction defects.
- Provided statistical and econometric analysis of survivorship related to consumer membership attrition in credit reporting programs.
- Provided statistical and econometric analysis of the correlation between purchase of infringing products and consequential purchase of related services.
- Provided statistical analysis and estimate of medical product sales in the absence of data from third party sales force.
- Provided statistical and econometric analysis of conference calling minutes related to alleged intentional interference and unfair competition.
- Conducted statistical analysis of incremental costs in support of lost profits calculations.

## EXPERT WITNESS EXPERIENCE (SINCE 2019)

---

- *MGA Entertainment Inc. v. Clifford “T.I.” Harris, et al.*, United States District Court, Central District of California, Western Division (2024). Testified at trial and deposition, and issued multiple expert reports on behalf of counter-defendant related to misappropriation of intellectual property (name, likeness, trade dress) related to the promotion and sale of toys.
- *Bernadine Griffith, et al. v. TikTok, Inc. and Bytedance, Inc.*, United States District Court, Central District of California (2024). Provided deposition testimony on behalf of plaintiff class involving damages and common impact related to the collection and use of personalized information connected to web browsing activity.
- *Touchstream Technologies, Inc., v. Charter Communications, Inc., et al.*, United States District Court, Eastern District of Texas, Marshall Division (2024). Provided deposition testimony on behalf of plaintiff related to damages for alleged patent infringement involving video streaming technology.
- *Touchstream Technologies, Inc., v. Comcast Cable Communications, LLC, D/B/A Xfinity, et al.*, United States District Court, Eastern District of Texas, Marshall Division (2024). Provided deposition testimony on behalf of plaintiff related to damages for alleged patent infringement involving video streaming technology.
- *American Compliance Technologies Inc., v. Advanced Chemical Transport Inc.*, United States District Court, Middle District of Florida, Tampa Division (2024). Submitted an expert report on behalf of counterclaimants related to the alleged trademark infringement involving environmental clean-up, transport, and disposal services.
- *In Re Pork Antitrust Litigation*, United States District Court, Northern District of Minnesota (2024). Provided testimony in depositions (3) and issued multiple reports on behalf of plaintiff class related to the economic effects of an alleged conspiracy to constrain capacity and increase prices in the pork industry.
- *Lisa Bodenbarg v. Apple Inc.*, United States District Court, Northern District of California (2024). Submitted an expert report on behalf of plaintiff class related to damages involving alleged breach of contract for cloud storage services.
- *Tyler Baker et al. v. ParkMobile LLC*, United States District Court for the Northern District of Georgia, Atlanta Division (2024). Submitted an expert report on behalf of plaintiff class related to damages involving a data breach and the improper capture and transmission of personalized information held and maintained in commercial database(s).
- *In Re Broiler Chicken Antitrust Litigation*, United States District Court, Northern District of Illinois (2024). Testified at a bench trial (evidentiary hearing), and in depositions (4), and issued multiple expert reports on behalf of plaintiff class related to the economic effects of an alleged conspiracy to constrain capacity and increase prices in the broiler chicken industry.
- *In Re: Packaged Seafood Products Litigation*, United States District Court, Southern District of California (2024). Provided testimony in depositions (3), testified at trial (evidentiary hearing, and issued multiple expert reports on behalf of direct purchaser plaintiff class related to class certification and estimation of class wide damages in an antitrust case involving alleged collusion on the prices for packaged seafood.
- *MSP Recovery Claims Series v. Express Scripts Inc., et al.*, United States District Court, Northern District of Illinois, Western Division, (2023). Provided deposition testimony on behalf of plaintiff classes (direct and indirect) and issued multiple expert reports related to the economic effects of an alleged anticompetitive practices involving the pharmaceutical drug Acthar.



- *Q Industries Inc. v. O'Reilly Automotive Inc., et al.*, United States District Court, Northern District of California (2023). Provided deposition testimony and issued an expert report on behalf of O'Reilly defendant related to alleged trademark infringement involving retail supply of automotive equipment.
- *Q Industries Inc. v. Test-Rite Products Corp., et al.*, United States District Court, Northern District of California (2023). Provided deposition testimony, and issued an expert report on behalf of defendant Test-Rite Corp. related to alleged trademark infringement involving wholesale supply of automotive equipment.
- *In Re Turkey Antitrust Litigation*, United States District Court, Northern District of Illinois, Eastern Division (2023). Provided deposition testimony, and issued multiple expert reports on behalf of plaintiff class related to the economic effects of an alleged conspiracy to increase prices and restrain supply in the turkey industry.
- *Microvention Inc. v. Balt USA, LLC, et al.*, United States District Court, Central District of California (2023). Provided deposition testimony, and issued an expert report on behalf of Defendant involving damages related to alleged misappropriation of trade secrets involving neuroendovascular medical devices.
- *In Re Blackbaud, Inc. Customer Data Security Breach Litigation*, United States District Court for the District of South Carolina, Columbia Division (2023). Provided deposition testimony, and issued an expert report on behalf of plaintiff class related to damages involving a data breach and the improper capture and transmission of personalized information held and maintained in commercial database(s).
- *Dr. Joseph Ciccio, et al., v. SmileDirect Club Inc., et al.*, United States District Court, Middle District of Tennessee, Nashville Division, (2022). Provided deposition testimony, and issued an expert report on behalf of plaintiff class involving damages related to allegations of false statements regarding orthodontic and dental treatment.
- *Lauren Adele Oliver v. Meow Wolf Inc., et al.*, United States District Court for the District of New Mexico (2022). Provided deposition testimony, and issued an expert report on behalf of plaintiff involving damages related to alleged copyright infringement involving art and art exhibits.
- *Sprint Communications Company LP v. Cequel Communications, LLC, et al.*, United States District Court, District of Delaware (2022). Testified at a bench trial (evidentiary hearing), and in deposition, and issued multiple expert reports on behalf of plaintiff related to lost profits and royalty damages from alleged patent infringement involving VoIP telephony network services.
- *VRtoysone, LLC, et al v. Disney Interactive Studios, Inc.*, United States District Court, Central District of California, Western Division (2022). Submitted an expert report on behalf of Defendant involving damages related to alleged patent infringement involving video games.
- *Patrick Calhoun, et al. v. Google LLC*, United States District Court, Northern District of California (2021). Provided testimony in depositions (2) , and issued multiple expert reports on behalf of plaintiff class involving damages and common impact related to alleged breach of contract involving the collection and retention of personalized information connected to web browsing activity.
- *CPI Security Systems Inc. v. Vivint Smart Home Inc. et al.*, United States District Court, Western District of North Carolina, Charlotte Division (2021). Provided deposition testimony, and issued an expert report on behalf of plaintiff involving unjust enrichment and royalty damages related to alleged false advertising and unfair competition related to security monitoring systems and services.



- *Martifer-Silverado Fund I, LLC and Silverado Power LLC v. Talesun Solar USA, Ltd.*, Superior Court of California, San Francisco County (2021). Provided trial and deposition testimony on behalf of Defendant, related to alleged breach of contract involving solar energy projects.
- *Javo Beverage Co., Inc., v. Stephen Corey*, American Arbitration Association (2021). Provided trial (arbitration) and deposition testimony on behalf of respondent related to breach of contract and misappropriation of confidential information and technology in the market for coffee extracts.
- *Andrea Williams and James Stewart (class reps) v. Apple Inc.*, United States District Court, Northern District of California (2021). Submitted an expert report, and issued an expert report on behalf of plaintiffs related to damages involving alleged breach of contract regarding provision of electronic file storage.
- *QC Manufacturing, Inc., v. Solatube International, Inc. and Brighter Concepts, Inc. dba Solatube Home Daylight*, JAMS Arbitration, Los Angeles, CA (2020). Provided trial (arbitration) testimony, and issued an expert report on behalf of complainant related to a breach of contract (litigation settlement agreement) involving whole house fans.
- *In Re Domestic Airline Travel Antitrust Litigation*, United States District Court, District of Columbia (2020). Provided deposition testimony, and issued multiple expert reports on behalf of plaintiff class related to the economic effects of an alleged conspiracy to constrain capacity in the domestic airline travel industry.
- *RV Skincare Brands LLC v. Digby investments Ltd., Quickbox LLC, et al.*, United States District Court, Southern District of New York (2020). Submitted an expert report on behalf of certain defendant related to damages from alleged counterfeit sales and trademark infringement involving fulfillment of skincare product commerce.
- *Cisco Systems Inc. et al. v. Zahid Hassan Sheikh et al.*, United States District Court, Northern District of California (2020). Provided deposition testimony, and issued an expert report on behalf of certain defendants related to damages from alleged counterfeit sales and trademark infringement involving transceiver and switching IT network equipment.
- *San Diego Country Credit Union v. Citizens Equity First Credit Union*, United States District Court, Southern District of California (2020). Provided deposition testimony, and issued an expert report on behalf of plaintiff related to damages flowing from fraudulent declaration in the registration of a trademark involving credit unions.
- *Sprint Communications Company LP v. Atlantic Broadband Finance LLC, et al.*, United States District Court, District of Delaware (2020). Provided deposition testimony, and issued multiple expert reports on behalf of plaintiff related to lost profits royalty damages from alleged patent infringement involving VoIP telephony network services.
- *Sprint Communications Company LP v. Charter Communications Inc. et al.*, United States District Court, District of Delaware (2020). Provided deposition testimony, and issued multiple expert reports on behalf of plaintiff related to lost profits and royalty damages from alleged patent infringement involving VoIP telephony network services.
- *Sprint Communications Company LP v. Mediacom Communications Corp.*, United States District Court, District of Delaware (2020). Provided deposition testimony, and issued multiple expert reports on behalf of plaintiff related to lost profits and royalty damages from alleged patent infringement involving VoIP telephony network services.

- *Sprint Communications Company LP v. TPC Global LLC et al.*, United States District Court, District of Delaware (2020). Provided deposition testimony, and issued multiple expert reports on behalf of plaintiff related to lost profits and royalty damages from alleged patent infringement involving VoIP telephony network services.
- *Sprint Communications Company LP v. Wideopenwest Inc. et al.*, United States District Court, District of Delaware (2020). Provided deposition testimony, and issued multiple expert reports on behalf of plaintiff related to lost profits and royalty damages from alleged patent infringement involving VoIP telephony network services.
- *SE&P Dow Jones Indices LLC and SPDJ Singapore Pte Ltd. v. BSE Ltd.*, United States District Court, Northern District of California (2020). Provided trial (tribunal) testimony, and issued an expert report on behalf of claimants and counter-respondants for an arbitration concerning damages from breach of contract in a service joint venture related to the use of indexes and associated data for creation and analysis of international financial securitized and derivatives.
- *In Re: Molded Doors Indirect Purchaser Antitrust Litigation*, United States District Court, Eastern District of Virginia, Richmond Division (2020). Provided deposition testimony, and issued multiple expert reports related to class certification and the merits phase of an antitrust case on behalf of an indirect purchaser plaintiff class related to the evaluation of common impact, pass-through, and class wide damages involving alleged collusion on the prices for interior molded doors.

## RESEARCH PAPERS AND PUBLICATIONS

---

- “FRAND Commitments and Royalties for Standard Essential Patents”, with S. Bosworth and E. Matolo, in Complications and Quandaries in the ICT Sector, Bharadwaj, Gupta, and Devaiah eds., Ch. 2, Springer Open, ISBN 978-981-10-449570, 2018.
- “Corrective Advertising in Lanham Act Damages: The Use and Misuse of Past Advertising Expenditures” with S. Bosworth and E. Matolo, *The Trademark Reporter*, May-June Volume, 2017.
- “The Case for Admitting Settlement License Agreements in a Reasonable Royalty Analysis,” with S. Conroy and R. Knudsen, 2011, *Les Nouvelles*, Volume XLVI No. 4, 2012.
- “Cost Analysis,” with J. Kinrich and A. Meister, in Intellectual Property Damages, Guidelines and Analysis, 2004 supplement, M. Glick, L. Reymann, and R. Hoffman, eds., Chapter 14a, Wiley: New York.
- “Analysis and Measurement of Damages in Patent Infringement Actions,” with J. Kinrich, 2003, proceedings of Practicing Law Institute.

## PAST OR PRESENT AWARDS, PROFESSIONAL MEMBERSHIPS

---

Outstanding Antitrust Litigation Achievement in Economics, American Antitrust Institute, 2023  
Outstanding Antitrust Litigation Achievement in Economics, American Antitrust Institute, 2019  
American Antitrust Institute, advisory board member  
American Bar Association, member  
American Economic Association, member  
Licensing Executives Society, member, chapter chair  
Los Angeles County Bar Association, member  
Los Angeles Intellectual Property Law Association, member  
Orange County Bar Association, member  
Orange County Patent Law Association, member

## Appendix 2: Materials Considered

### Legal Materials

- Class Action Complaint, May 26, 2023
- *Corrected Exhibit 1 to Kindler.pdf*
- Declaration of Bernadine Griffith, June 21, 2024
- Declaration of Dr. Andrew Stivers, July 12, 2024
- Declaration of Jacob Watters, June 21, 2024
- Declaration of Lauren R. Kindler, July 12, 2024
- Declaration of Lizzie Li in Support of Opposition to Motion for Class Certification, July 11, 2024
- Declaration of Patricia Shih, June 21, 2024
- Declaration of Ron Schnell, July 12, 2024
- Declaration of Russell W. Mangum III, Ph.D. in Support of Plaintiffs' Motion for Class Certification, June 21, 2024
- Declaration of Zubair Shafiq, Ph.D. in Support of Plaintiffs' Motion for Class Certification, June 21, 2024
- Defendants Amended Responses And Objections To Plaintiff Bernadine Griffith's First Set Of Interrogatories (Nos. 1–2), Nov. 21, 2023
- Defendants Amended Responses And Objections To Plaintiffs' First Set Of Requests For Production Of Documents And Things (Nos. 1–59), Dec. 22, 2023
- Defendants Amended Responses And Objections To Plaintiffs' Fourth Set Of Interrogatories To Defendants (Nos. 16–17), Mar. 20, 2024
- Defendants Amended Responses And Objections To Plaintiffs' Fourth Set Of Requests For Production Of Documents And Things (Nos. 73–81), Jan. 5, 2024
- Defendants Amended Responses And Objections To Plaintiffs' Second Set Of Interrogatories (Nos. 3–14), Apr. 16, 2024
- Defendants Amended Responses And Objections To Plaintiffs' Second Set Of Interrogatories (Nos. 3–14), Dec. 22, 2023
- Defendants Amended Responses And Objections To Plaintiffs' Second Set Of Requests For Production Of Documents And Things (Nos. 60–68), Dec. 22, 2023
- Defendants Amended Responses And Objections To Plaintiffs' Third Set Of Interrogatories (No. 15), Jan. 19, 2024
- Defendants First Set Of Interrogatories (Nos. 1–12), Sept. 1, 2023
- Defendants First Set Of Interrogatories To Plaintiff Jacob Watters (Nos. 1–12), Nov. 2, 2023
- Defendants First Set Of Interrogatories To Plaintiff Matthew Rauch (Nos. 1–12), Nov. 2, 2023
- Defendants First Set Of Interrogatories To Plaintiff Patricia Shih (Nos. 1–12), Nov. 2, 2023
- Defendants First Set Of Interrogatories To Plaintiff Philip Cantore (Nos. 1–13), May 17, 2024
- Defendants First Set Of Interrogatories To Plaintiff Rhonda Irvin (Nos. 1–12), Nov. 2, 2023
- Defendants First Set Of Requests For Production Of Documents And Things (Nos. 1–35), Sept. 1, 2023
- Defendants First Set Of Requests For Production Of Documents And Things To Plaintiff Jacob Watters (Nos. 1–32), Nov. 2, 2023
- Defendants First Set Of Requests For Production Of Documents And Things To Plaintiff Matthew Rauch (Nos. 1–34), Nov. 2, 2023
- Defendants First Set Of Requests For Production Of Documents And Things To Plaintiff Patricia Shih (Nos. 1–36), Nov. 2, 2023

## **Appendix 2: Materials Considered**

- Defendants First Set Of Requests For Production Of Documents And Things To Plaintiff Philip Cantore (Nos. 1–68), May 17, 2024
- Defendants First Set Of Requests For Production Of Documents And Things To Plaintiff Rhonda Irvin (Nos. 1–32), Nov. 2, 2023
- Defendants’ Opposition to Plaintiffs’ Motion for Class Certification, July 12, 2024
- Defendants Responses And Objections To Plaintiff Bernadine Griffith’s First Set Of Requests For Production Of Documents And Things (Nos. 1–59), Aug. 10, 2023
- Defendants Responses And Objections To Plaintiff Bernadine Griffith’s First Set Of Interrogatories (Nos. 1–2), Sept. 25, 2023
- Defendants Responses And Objections To Plaintiffs’ Eleventh Set Of Requests For Production Of Documents And Things (Nos. 141–142), June 12, 2024
- Defendants Responses And Objections To Plaintiffs’ Fifth Set Of Interrogatories To Defendants (No. 18), Apr. 17, 2024
- Defendants Responses And Objections To Plaintiffs’ Fifth Set Of Requests For Production Of Documents And Things (No. 82), Jan. 2, 2024
- Defendants Responses And Objections To Plaintiffs’ Fourth Set Of Interrogatories To Defendants (Nos. 16–17), Feb. 20, 2024
- Defendants Responses And Objections To Plaintiffs’ Fourth Set Of Requests For Production Of Documents And Things (Nos. 73–81), Dec. 11, 2023
- Defendants Responses And Objections To Plaintiffs’ Second Set Of Interrogatories (Nos. 3–14), Nov. 20,
- Defendants Responses And Objections To Plaintiffs’ Second Set Of Requests For Production Of Documents And Things (Nos. 60–68), Nov. 20, 2023
- Defendants Responses And Objections To Plaintiffs’ Seventh Set Of Requests For Production Of Documents And Things (Nos. 91–103), Apr. 17, 2024
- Defendants Responses and Objections to Plaintiffs’ Sixth Set of Interrogatories to Defendants (Nos. 19–25), Sept. 12, 2024
- Defendants Responses And Objections To Plaintiffs’ Sixth Set Of Requests For Production Of Documents And Things (Nos. 83–90), Feb. 20, 2024
- Defendants Responses And Objections To Plaintiffs’ Tenth Set Of Requests For Production Of Documents And Things (Nos. 125–140), June 5, 2024
- Defendants Responses And Objections To Plaintiffs’ Third Set Of Interrogatories (No. 15), Jan. 2, 2024
- Defendants Responses And Objections To Plaintiffs’ Third Set Of Requests For Production Of Documents And Things (Nos. 69–72), Nov. 30, 2023
- Defendants Responses And Objections To Plaintiffs’ Twelfth Set Of Requests For Production Of Documents And Things (Nos. 143–144), June 19, 2024
- Defendants Second Set Of Interrogatories To Plaintiff Bernadine Griffith (No. 13), May 17, 2024
- Defendants Second Set Of Interrogatories To Plaintiff Jacob Watters (No. 13), May 17, 2024
- Defendants Second Set Of Interrogatories To Plaintiff Patricia Shih (No. 13), May 17, 2024
- Defendants Second Set Of Requests For Production Of Documents And Things (Nos. 36–93), Feb. 22, 2024
- Defendants Second Set Of Requests For Production Of Documents And Things To Plaintiff Jacob Watters (Nos. 33–70), May 17, 2024

## Appendix 2: Materials Considered

- Defendants Third Set Of Requests For Production Of Documents And Things To Plaintiff Bernadine Griffith (Nos. 94–113), May 17, 2024
- Defendants Third Set Of Requests For Production Of Documents And Things To Plaintiff Patricia Shih (Nos. 37–90), May 17, 2024
- Defendants’ Amended Response and Objections to Plaintiffs’ Fourth Set of Document Requests, Jan. 5, 2024
- Defendants’ Amended Responses and Objections to Plaintiff’s First Set of Interrogatories (Nos. 1–2), Nov. 21, 2023
- Defendants’ Amended Responses and Objections to Plaintiff’s Fourth Set of Interrogatories (Nos. 16–17), Mar. 20, 2024
- Defendants’ Amended Responses and Objections to Plaintiffs’ First Set of Requests for Production of Documents and Things (Nos. 1–59), Dec. 22, 2023
- Defendants’ Amended Responses and Objections to Plaintiffs’ Second Set of Interrogatories (Nos. 3–14), Apr. 16, 2024
- Defendants’ Amended Responses and Objections to Plaintiffs’ Second Set of Interrogatories (Nos. 3–14), Dec. 22, 2023
- Defendants’ Amended Responses and Objections to Plaintiffs’ Second Set of Requests for Production of Documents and Things (Nos. 60–68), Dec. 22, 2023
- Defendants’ Amended Responses and Objections to Plaintiffs’ Third Set of Rogs and Verification, Jan. 19.
- Defendants’ Answer to Plaintiffs’ First Amended Complaint, Dec. 26, 2023
- Defendants’ Responses and Objections to Plaintiff’s Ninth Set of Requests for Production of Documents and Things (Nos. 111–122), May 15, 2024
- Defendants’ Responses and Objections to Plaintiffs’ Fourth Set of Document Requests, Dec. 11, 2023
- Defendants’ Responses and Objections to Plaintiffs’ Fourth Set of Interrogatories (Nos. 16–17), Feb. 20, 2024
- Defendants’ Responses and Objections to Plaintiffs’ Second Set of Interrogatories (Nos. 3–14), Nov. 20, 2023
- Defendants’ Responses and Objections to Plaintiffs’ Second Set of RFP of Documents and Things (Nos. 60–68), Nov. 20, 2023
- Defendants’ Responses and Objections to Plaintiffs’ Seventh Set of Requests for Production of Documents and Things (Nos. 91–103), Apr. 17, 2024
- Defendants’ Responses and Objections to Plaintiffs’ Sixth Set of Requests for Production of Documents and Things (Nos. 83–90), Feb. 20, 2024
- Defendants’ Responses and Objections to Plaintiffs’ Third Set of Interrogatories (No. 15), Jan. 2, 2024
- Defendants’ Supplemental Memorandum in Opposition to Plaintiff’s Motion to Compel Discovery Regarding Websites with TikTok SDK Installed, Damages Calculation, and Custodians, Oct. 6, 2023
- Expert Report of Bruce Schneier, Sept. 20, 2024
- Expert Report of Zubair Shafiq, Ph.D., Sept. 20, 2024
- Expert Reply Report of Zubair Shafiq, Ph.D. In Support of Plaintiffs’ Motion for Class Certification, July 26, 2024
- First Amended Complaint, Oct. 20, 2023
- Joint Stipulation Regarding Plaintiff’s Motion to Compel Discovery Regarding Websites with TikTok SDK Installed, Damages Calculation, and Custodians, Sept. 28, 2023
- Notice of Voluntary Dismissal Without Prejudice by Matthew Rauch, Dec. 4, 2023
- Order Denying Motion for Class Certification [Dkt. No. 177], Sept. 9, 2024



## Appendix 2: Materials Considered

- Order Denying Motion to Continue Deadlines [Dkt. No. 243], Sept. 12, 2024
- Order Granting in Part and Denying Part Defendants' Motion to Dismiss Plaintiffs' First Amended Complaint, Dec. 13, 2023
- Order Regarding Substitution of Plaintiff, Apr. 12, 2024
- Plaintiff Bernadine Griffith's Supplemental Responses to Defendants' First Set of Interrogatories (Nos. 1–12), Nov. 29, 2023
- Plaintiff Jacob Watters's Responses And Objections To Defendants' First Set Of Requests For Production (Nos. 1–32), Dec. 4, 2023
- Plaintiff Jacob Watters's Responses To Defendants' First Set Of Interrogatories (Nos. 1–12), Dec. 4, 2023
- Plaintiff Patricia Shih's Responses And Objections To Defendants' First Set Of Requests For Production (Nos. 1–36), Dec. 4, 2023
- Plaintiff Patricia Shih's Responses To Defendants' First Set Of Interrogatories (Nos. 1–12), Dec. 4, 2023
- Plaintiff Rhonda Irvin's Responses And Objections To Defendants' First Set Of Requests For Production (Nos. 1–32), Dec. 4, 2023
- Plaintiff Rhonda Irvin's Responses To Defendants' First Set Of Interrogatories (Nos. 1–12), Dec. 4, 2023
- Plaintiffs' Eighth Set Of Requests For Production Of Documents And Things (Nos. 104–110), Apr. 3, 2024
- Plaintiff's First Set Of Interrogatories To Defendants (Nos. 1–2), Aug. 25, 2023
- Plaintiff's Responses And Objections To Defendants' First Set Of Requests For Production (Nos. 1–35), Oct. 3, 2023
- Plaintiff's Responses And Objections To Defendants' Second Set Of Requests For Production (Nos. 36–93), Mar. 25, 2024
- Plaintiff's Responses To Defendants' First Set Of Interrogatories (Nos. 1–12), Oct. 3, 2023
- Plaintiff's Supplemental Responses And Objections To Defendants' First Set Of Requests For Production (Nos. 1–35), Nov. 29, 2023
- Plaintiff's Supplemental Responses To Defendants' First Set Of Interrogatories (Nos. 1–12), Nov. 29, 2023
- Plaintiff's First Set of Requests for Production of Documents and Things (Nos. 1–59), June 27, 2023
- Plaintiffs' Eleventh Set Of Requests For Production Of Documents And Things (Nos. 141–142), May 10, 2024
- Plaintiffs' Fifth Set of Interrogatories to Defendants (No. 18), Mar. 18, 2024
- Plaintiffs' Fifth Set Of Requests For Production Of Documents And Things (No. 82), Nov. 30, 2023
- Plaintiffs' Fourth Set Of Interrogatories To Defendants (Nos. 16–17), Jan. 19, 2024
- Plaintiffs' Ninth Set of Requests for Production of Documents and Things (Nos. 111–122), Apr. 15, 2024
- Plaintiffs' Requests For Production Of Documents And Things, Set 3 (Nos. 69–72), Oct. 31, 2023
- Plaintiffs' Requests For Production Of Documents And Things, Set 4 (Nos. 73–81), Nov. 10, 2023
- Plaintiffs' Second Set Of Interrogatories To Defendants (Nos. 3–14), Oct. 20, 2023
- Plaintiffs' Second Set Of Requests For Production Of Documents And Things (Nos. 60–68), Oct. 20, 2023
- Plaintiffs' Seventh Set of Requests for Production of Documents and Things (Nos. 91–103), Mar. 18, 2024
- Plaintiffs' Sixth Set Of Requests For Production Of Documents And Things (Nos. 83–90), Jan. 19, 2024
- Plaintiffs' Tenth Set Of Requests For Production Of Documents And Things (Nos. 125–140), May 6, 2024
- Plaintiffs' Third Set Of Interrogatories To Defendants (No. 15), Nov. 30, 2023
- Plaintiffs' Twelfth Set Of Requests For Production Of Documents And Things (Nos. 143–144), May 20, 2024
- Reporter's Transcript of Proceedings, Sept. 29, 2023

## Appendix 2: Materials Considered

- Second Amended Class Action Complaint, Apr. 11, 2024
- Supplemental Memorandum in Support of Plaintiff's Motion to Compel Discovery Regarding Websites with TikTok SDK Installed, Damages Calculation, and Custodians, Oct. 6, 2023, and Exhibits
- Verification For Defendants' Amended Responses And Objections To Plaintiffs' Interrogatories, Set Two, Mar. 28, 2024

### Depositions and Exhibits

- Deposition of Bernadine Griffith, June 26, 2024
- Deposition of Branky Shao, June 7, 2024
- Deposition of Daniel Kirchgessner, Apr. 17, 2024
- Deposition of Dr. Zubair Shafiq, July 2, 2024
- Deposition of Jacob Watters, June 25, 2024
- Deposition of Lauren R. Kindler, July 22, 2024
- Deposition of Lizzie Li, June 5, 2024
- Deposition of Patricia Shih, June 27, 2024
- Deposition of Rebecca Wong, May 17, 2024
- Deposition of Ron Schnell, July 19, 2024
- Deposition of Russell W. Mangum III, Ph.D., July 3, 2024
- Deposition of Sheraz Amin, Sept. 11, 2024
- Deposition of Simran Sahni, June 18, 2024
- Deposition of Yun-Feng Wei, July 14, 2024

### Publicly Available

- 18 U.S. Code § 2520
- Adam Birney, "What is the maximum length for a TikTok video in 2024," Feb. 24, 2024, <https://www.androidauthority.com/how-long-are-tiktok-videos-3163309/>
- Aleecia M. McDonald and Lorrie Faith Cranor, "Americans' Attitudes About Internet Behavioral Advertising Practices," Proceedings of the 9th annual ACM workshop on Privacy in the electronic society, WPES 2010: 63–72
- Alessandro Acquisti, "The Economics of Personal Data and the Economics of Privacy," OECD Joint WPISP-WPIE Roundtable, Dec. 1, 2010, *available at* <https://www.oecd.org/sti/ieconomy/46968784.pdf>
- Alessandro Acquisti, Leslie K. John, and George Loewenstein, "What is Privacy Worth?" *The Journal of Legal Studies* 42, no. 2 (June 2013): 249–274
- Anas Baig, "What are Advertising Cookies and How are they used," Securiti, Mar. 4, 2024, <https://securiti.ai/blog/advertising-cookies/>
- Anders Gustafsson, Andreas Herrmann, and Frank Huber, *Conjoint Measurement: Methods and Applications* (Springer, 2003)
- Andrew Rossow, "The Birth of GDPR: What Is It And What You Need To Know," Forbes, May 25, 2018, <https://www.forbes.com/sites/andrewrossow/2018/05/25/the-birth-of-gdpr-what-is-it-and-what-you-need-to-know/>
- Avi Goldfarb and Catherine Tucker, "Privacy Regulation and Online Advertising," *Management Science* 51, no. 1 (2011): 57–71

## Appendix 2: Materials Considered

- BLS, “CPI Inflation Calculator,” *available at* [https://www.bls.gov/data/inflation\\_calculator.htm](https://www.bls.gov/data/inflation_calculator.htm)
- BLS, “Databases, Tables & Calculators by Subject,” *available at*
- *Brown v. Google, LLC*, 2022 WL 17961497 (Dec. 12, 2022)
- ByteDance, “Our Mission,” accessed Mar. 6, 2024, <https://www.bytedance.com/en/>
- Casey Johnston, “Google paying users to track 100% of their Web usage via little black box,” *Ars Technica*, Feb. 8, 2012, <https://arstechnica.com/gadgets/2012/02/google-paying-users-to-track-100-of-their-web-usage-via-little-black-box/>
- Census Bureau Data, “International Database,” accessed Sept. 13, 2024, [https://www.census.gov/data-tools/demo/idb/#/table?COUNTRY\\_YR\\_ANIM=2021&menu=tableViz&COUNTRY\\_YEAR=2021&TREND\\_RANGE=1950,2100&TREND\\_STEP=10&TREND\\_ADD\\_YRS=&POP\\_YEARS=2024&CCODE=US&CCODE\\_SINGLE=US&popPages=PYRAMID&ageGroup=1Y](https://www.census.gov/data-tools/demo/idb/#/table?COUNTRY_YR_ANIM=2021&menu=tableViz&COUNTRY_YEAR=2021&TREND_RANGE=1950,2100&TREND_STEP=10&TREND_ADD_YRS=&POP_YEARS=2024&CCODE=US&CCODE_SINGLE=US&popPages=PYRAMID&ageGroup=1Y)
- Census Bureau Data, “Population Estimates By Age,” accessed June 14, 2024, <https://www2.census.gov/programs-surveys/popest/datasets/2020-2023/national/asrh/nc-est2023-agesex->
- cobaltorange, “Does anyone still do Screenwise Panel?” Reddit, Sept. 20, 2020, [https://www.reddit.com/r/beermoney/comments/iwijxm/does\\_anyone\\_still\\_do\\_screenwise\\_panel/?rdt=38358](https://www.reddit.com/r/beermoney/comments/iwijxm/does_anyone_still_do_screenwise_panel/?rdt=38358)
- Dante D’Orazio, “Google Screenwise pays opt-in users for expanded web tracking,” *The Verge*, Feb. 8, 2012, <https://www.theverge.com/2012/2/8/2785751/google-screenwise-panel-web-monitoring-knowledge-networks>
- David Auerbach, “Privacy Is Becoming a Premium Service,” *Slate*, Mar. 31, 2015, <https://slate.com/technology/2015/03/at-t-gigapower-the-company-wants-you-to-pay-it-not-to-sell-your-data.html>
- Eric Benjamin Seufert, “What is an ‘appropriate fee’ for a social media subscription,” *Mobile Dev Memo*, Dec. 1, 2023, *available at* <https://mobiledevmemo.com/what-is-an-appropriate-fee-for-a-social-media->
- Erik Brynjolfsson et al, “The Digital Welfare of Nations: New Measures of Welfare Gains and Inequality,” *National Bureau of Economic Research*, 2023, *available at* <https://www.nber.org/papers/w31670>
- European Union, “Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the Protection of Natural Persons with Regard to the Processing of Personal Data and on the Free Movement of Such Data, and Repealing Directive 95/46/EC (General Data Protection Regulation),” May 4, 2016, <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A02016R0679->
- Evan Gower, “How To View How Many Times An App Has Been Downloaded,” *Alphr*, Apr. 30, 2021, <https://www.alphr.com/view-downloads-app/>
- Facebook, Inc., Annual Report (Form 10-K) (Feb. 1, 2013)
- Federal Reserve, “Foreign Exchange Rates,” *available at* [https://www.federalreserve.gov/releases/h10/hist/dat00\\_eu.htm](https://www.federalreserve.gov/releases/h10/hist/dat00_eu.htm)
- Feroot, “Beware of Pixels & Trackers,” 2023 Feroot Client-Side Security Report, Apr. 5, 2023
- FT Reporters, “TikTok’s US revenues hit \$16bn as Washington threatens ban,” *Financial Times*, Mar. 15, 2024, *available at* <https://www.ft.com/content/275bd036-8bc2-4308-a5c9-d288325b91a9>
- Garrett A. Johnson, Scott K. Shriver, and Shaoyin Du, “Consumer privacy choice in online advertising: Who opts out and at what cost to industry?” *Marketing Science* 39, no. 1 (Jan.–Feb. 2020): 33–51
- Garrett Johnson, @garjoh\_canuck, Twitter, Aug. 22, 2019, [https://twitter.com/garjoh\\_canuck/status/1164566217602031621?s=20](https://twitter.com/garjoh_canuck/status/1164566217602031621?s=20)



## Appendix 2: Materials Considered

- Gary Teleky, “Reklaim Review: Get Paid to Hand Over Personal Information?” Sept. 3, 2022, <https://monetaric.ca/reklaim-review/>
- Google Inc., Annual Report (Form 10-K) (Mar. 16, 2006)
- Google Play, “Nielsen Meter Companion,” accessed Sept. 17, 2024, <https://play.google.com/store/apps/details?id=com.nielsen.companionapp>
- Google Play, “Nielsen Mobile App,” accessed Sept. 17, 2024, <https://play.google.com/store/apps/details?id=com.nielsen.odm>
- Google Play, “Reklaim,” accessed Sept. 17, 2024, [https://play.google.com/store/apps/details?id=com.killi\\_app](https://play.google.com/store/apps/details?id=com.killi_app)
- Google Play, “SavvyConnect,” accessed Sept. 17, 2024, <https://play.google.com/store/apps/details?id=com.luth.client>
- Google Play, “Screenwise Meter,” accessed Sept. 17, 2024, <https://play.google.com/store/apps/details?id=com.google.android.apps.userpanel>
- Google, “Help Us Make Google Better,” Feb. 10, 2012, image from internet archive, *available at* <https://web.archive.org/web/20120210041154/http://www.google.com/landing/screenwisepanel/>
- GumGum, “Contextual Vs Behavioral Targeting,” Dec. 29, 2022, <https://gumgum.com/blog/contextual-vs-behavioral-targeting>
- Hanna Krasnova, Thomas Hildebrand, and Oliver Guenther, “Investigating the Value of Privacy in Online Social Networks: Conjoint Analysis,” ICIS 2009 Proceedings, paper 173, 2009
- Il-Horn Hann, Kai-Lung Hui, Sang-Yong Tom Lee and Ivan P. L. Png, “Overcoming Online Information Privacy Concerns: An Information-Processing Theory Approach,” *Journal of Management Information Systems* 24, no. 2 (2007): pp. 13–42
- Ipsos, “About the Ipsos Screenwise Panel,” accessed Mar. 7, 2024, <https://screenwisepanel.com/home>
- Ipsos, “About the Ipsos Screenwise Panel,” accessed Sept. 13, 2024, <https://screenwisepanel.com/home>
- Ipsos, “Google Panel Privacy Policy,” Dec. 28, 2022, <https://screenwisepanel.com/google-panel-privacy->
- Ipsos, “How Can We Help You?” <https://screenwisepanel.com/helpcenter>
- Ipsos, “Ipsos Screenwise Panel Cookie Policy,” June 25, 2021, <https://screenwisepanel.com/cookie-policy>
- Ipsos, “Screenwise Panel Hardware Usage and Return Agreement,” <https://screenwisepanel.com/hardware->
- Ipsos, “Screenwise Panel Sign In,” <https://screenwisepanel.com/>
- J. Howard Beales and Jeffrey A. Eisenach, “An Empirical Analysis of the Value of Information Sharing in the Market for Online Content,” *Navigant Economics*, Jan. 2014
- Jon Brodtkin, “AT&T offers gigabit Internet discount in exchange for your Web history,” *Ars Technica*, Dec. 11, 2013, <https://arstechnica.com/information-technology/2013/12/att-offers-gigabit-internet-discount-in-exchange-for-your-web-history/>
- Jon Brodtkin, “AT&T to end targeted ads program, give all users lowest available price,” *Ars Technica*, Sept. 30, 2016, <https://arstechnica.com/information-technology/2016/09/att-to-end-targeted-ads-program-give-all-users-lowest-available-price/>
- Léa Roubinet, “‘Pay or Okay’ – The Move to Paid Subscriptions on Social Networks,” *Tech Policy*, Feb. 6, 2024, *available at* <https://www.techpolicy.press/pay-or-okay-the-move-to-paid-subscriptions-on-social->
- Learn Web Analytics, “What’s the Difference Between a Cookie, a Pixel, and a Tag?” accessed June 18, 2024, <https://learnwebanalytics.com/whats-the-difference-between-a-cookie-a-pixel-and-a-tag/>

## Appendix 2: Materials Considered

- LOKKER, “Website Privacy and Compliance Challenges: Quantifying Website Privacy Risks,” Mar. 2024, *available at* [https://lokker.com/wp-content/uploads/2024/04/LOKKER\\_Online-Data-Privacy-Report\\_032024-2.pdf](https://lokker.com/wp-content/uploads/2024/04/LOKKER_Online-Data-Privacy-Report_032024-2.pdf)
- Meta, “Facebook and Instagram to Offer Subscription for No Ads in Europe,” press release, Oct. 30, 2023, *available at* <https://about.fb.com/news/2023/10/facebook-and-instagram-to-offer-subscription-for-no-ads-in-europe/>
- Mikael Moeller, “Reklaim Review – Legit or Scam? (Full Details Revealed),” Paid From Surveys, Sept. 25, 2023, <https://paidfromsurveys.com/reklaim-review>
- Mikael Moeller, “SurveySavvy Review – Is It Legit? (Yes, BUT Not Good for All),” Paid From Surveys.com, Jan. 22, 2024, <https://paidfromsurveys.com/surveysavvy-review#more-51419>
- Monica Anderson, Michelle Faverio, and Jeffrey Gottfried, “Teens, Social Media and Technology 2023,” Pew Research Center, Dec. 11, 2023, <https://www.pewresearch.org/internet/2023/12/11/teens-social-media-and-technology-2023/>
- Natasha Singer, “AT&T’s Offer: Share Your Data for Personalized Ads, or Pay More,” *New York Times*, Feb. 18, 2015, <https://archive.nytimes.com/bits.blogs.nytimes.com/2015/02/18/atts-offer-share-your-data-for-personalized-ads-or-pay-more/>
- Neil Sweeney, “Welcome to Reklaim,” Reklaim, Sept. 8, 2021, <https://www.reklaimyours.com/learn/welcome-to-reklaim>
- Nielsen, “Computer & Mobile Panel,” accessed Mar. 7, 2024, <https://computermobilepanel.nielsen.com/ui/US/en/sdp/landing>
- Nielsen, “Nielsen U.S. Panel Privacy Notice Summary,” accessed June 20, 2024, <https://computermobilepanel.nielsen.com/ui/US/en/privacypolicyen.html>
- NOYB, “‘Pay or Okay’: 1,500 € a year for your online privacy?” Mar. 19, 2024, <https://noyb.eu/en/pay-or-okay-1500-eu-year-your-online-privacy>
- NOYB, “28 NGOs urge EU DPAs to reject ‘Pay or Okay’ on Meta,” Feb. 16, 2024, <https://noyb.eu/en/28-ngos-urge-eu-dpas-reject-pay-or-okay-meta>
- NOYB, “EDPB Opinion: Meta cannot rely on ‘Pay or Okay,’” Apr. 17, 2024, <https://noyb.eu/en/statement-edpb-pay-or-okay-opinion>
- Orson Lucas, “Corporate data responsibility,” KPMG, Aug. 2021, *available at* <https://advisory.kpmg.us/content/dam/advisory/en/pdfs/2021/corporate-data-responsibility-bridging-the-consumer-trust-gap.pdf>
- Pangle, “Ad Network of TikTok for Business,” accessed June 19, 2024, <https://www.pangleglobal.com>
- Paul Green and V. Srinivasan, “Conjoint Analysis in Consumer Research: Issues and Outlook,” *The Journal of Consumer Research* 5, no. 2 (Sept. 1978)
- PwC, “22nd Annual Global CEO Survey,” 2019, *available at* <https://www.pwc.com/gx/en/ceo-survey/2019/report/pwc-22nd-annual-global-ceo-survey.pdf>
- R.J. Weiss, “Nielsen Computer and Mobile Panel Review,” *The Ways To Wealth*, accessed Mar. 4, 2024, <https://www.thewaystowealth.com/reviews/nielsen-computer-and-mobile-panel-review/>
- Reklaim, “Are orders replacing the paycheck?” accessed Sept. 11, 2024, <https://help.reklaimyours.com/en/articles/7971172-are-orders-replacing-the-paycheck>
- Reklaim, “Can I pick and choose what I share with Reklaim?” accessed Sept. 11, 2024, <https://help.reklaimyours.com/en/articles/5115756-can-i-pick-and-choose-what-i-share-with-reklaim>

## Appendix 2: Materials Considered

- Reklaim, “How do points work?” accessed Sept. 10, 2024, <https://help.reklaimyours.com/en/articles/4937681-how-do-points-work>
- Reklaim, “How does Reklaim’s Refer-a-Friend program work?” accessed Sept. 10, 2024, <https://help.reklaimyours.com/en/articles/4936226-how-does-reklaim-s-refer-a-friend-program-work>
- Reklaim, “Privacy Policy” June 14, 2024, <https://www.reklaimyours.com/privacy-policy>
- Reklaim, “Reklaim’s Notice of Financial Incentive,” Feb. 27, 2022, <https://www.reklaimyours.com/notice-of-incentive>
- Reklaim, “What is a data order?” accessed Sept. 10, 2024, <https://help.reklaimyours.com/en/articles/7971152-what-is-a-data-order>
- Reklaim, “What is the best way to be eligible for more orders?” accessed Sept. 11, 2024, <https://help.reklaimyours.com/en/articles/7971171-what-is-the-best-way-to-be-eligible-for-more-orders>
- Reklaim, “What is the difference between an order and a poll?” accessed Sept. 11, 2024, <https://help.reklaimyours.com/en/articles/7971183-what-is-the-difference-between-an-order-and-a-poll>
- Reuters, “TikTok’s US revenue hits \$16 bln as Washington threatens ban, FT reports,” Mar 15, 2024, *available at* <https://www.reuters.com/technology/tiktoks-us-revenue-hits-16-bln-washington-threatens-ban-ft-reports-2024-03-15/>
- Risa Gelles-Watnick, “Americans’ Use of Mobile Technology and Home Broadband,” Jan. 31, 2024, <https://www.pewresearch.org/internet/2024/01/31/americans-use-of-mobile-technology-and-home-broadband/>
- Robert S. Pindyck and Daniel Rubinfeld, *Microeconomics* (Upper Saddle River: Pearson Education, Inc.,
- *Rodriguez et al., v. Google LLC*, Case No. 3:20-cv-04688-RS (DI 364, Exhibit 23), Expert Report of Michael J. Lasinski, Feb. 20, 2023
- Sara Atske and Andrew Perrin, “About three-in-ten U.S. adults say they are ‘almost constantly’ online,” Pew Research Center, Mar. 26, 2021, <https://www.pewresearch.org/short-reads/2021/03/26/about-three-in-ten-u-s-adults-say-they-are-almost-constantly-online/>
- Sarah Sluis, “Marketing Professor Garrett Johnson Wants You To Know That Cookies Increase Ad Revenue,” Ad Exchanger, Sept. 3, 2019, <https://www.adexchanger.com/online-advertising/marketing-professor-garrett-johnson-wants-you-to-know-that-cookies-increase-ad-revenue/>
- SAS, “Data Privacy: Are You Concerned,” *available at* <https://www.sas.com/en/whitepapers/data-privacy-110027.html>
- Snap Inc., Annual Report (Form 10-K) (Feb. 5, 2021)
- Stacey Higginbotham, “AT&T’s GigaPower plans turn privacy into a luxury that few would choose,” Yahoo! Finance, May 13, 2014, <https://finance.yahoo.com/news/t-gigapower-plans-turn-privacy-203513501.html>
- SurveySavvy, “How it Works,” accessed Mar. 5, 2024, [https://www.surveysavvy.com/how\\_it\\_works](https://www.surveysavvy.com/how_it_works)
- SurveySavvy, “SavvyConnect FAQs,” accessed June 18, 2024, <https://surveysavvy.com/savvyconnect-faqs/>
- SurveySavvy, “SavvyConnect Monthly Participation Requirements” accessed Mar. 4, 2024, <https://surveysavvy.com/savvyconnect-requirements/>
- SurveySavvy, “SavvyConnect Monthly Participation Requirements,” accessed Sept. 13, 2024, <https://surveysavvy.com/savvyconnect-requirements/>
- SurveySavvy, “What is SavvyConnect?” accessed June 13, 2024, <https://www.surveysavvy.com/savvyconnect>
- SurveySavvy, “What is SavvyConnect?” accessed Sept. 13, 2024,

## Appendix 2: Materials Considered

- SurveySavvy, “What is SavvyConnect?” Dec. 1, 2023, image, *available at* <https://web.archive.org/web/20231201102936/https://surveysavvy.com/savvyconnect/>
- SurveySavvy, “What is SavvyConnect?” June 5, 2023, image, *available at* <https://web.archive.org/web/20230605223803/https://surveysavvy.com/savvyconnect/>
- SurveySavvy, “What is SavvyConnect?” May 13, 2020, image, *available at* <https://web.archive.org/web/20200513143219/https://surveysavvy.com/savvyconnect/>
- Swish Goswami, “The Rising Concern Around Consumer Data And Privacy,” *Forbes*, Dec. 14, 2020, <https://www.forbes.com/sites/forbestechcouncil/2020/12/14/the-rising-concern-around-consumer-data-and-privacy/>
- Sylvia Dohrmann, Trent D. Buskirk, Ashley Hyon, and Jill Montaquila, “Address Based Sampling Frames for Beginners,” American Statistical Association Joint Statistical Meetings, 2014, *available at* [http://www.asasrms.org/Proceedings/y2014/files/311401\\_87449.pdf](http://www.asasrms.org/Proceedings/y2014/files/311401_87449.pdf)
- The Penny Hoarder, “How to Make \$345/Year By Installing These 3 Apps,” Sept. 11, 2023, accessed Mar. 1, 2024, <https://www.thepennyhoarder.com/make-money/how-to-make-295year-by-installing-these-2-apps/>
- *TikTok and ByteDance v. Merrick Garland*, Case No. 24-1113, Petition for Review of Constitutionality of the Protecting Americans from Foreign Adversary Controlled Applications Act, May, 7, 2024
- TikTok, “About Events API,” Oct. 2023, *available at* <https://ads.tiktok.com/help/article/events-api?lang=en>
- Tom Nathaniel, “Screenwise Meter Panel Review: Money for Nothing?” LushDollar.com, Aug. 12, 2020, <https://lushdollar.com/the-screenwise-meter-panel/>
- Twitter, Inc., Annual Report (Form 10-K) (Feb. 29, 2016)

### Other Communications

- Conversation with Dr. Shafiq
- Email from Caitlin McKelvie, Associate, Wilson Sonsini Goodrich & Rosati, to Greg Linkh, Glancy Prongay & Murray LLP, “Re: Griffith v. TikTok: TIKTOK-BG-00175591,” Aug. 30, 2024
- Email from Screenwise Panel Support, Ipsos, “Re: Screenwise Member portal – Panel Member enquiry Ipsos:0670694,” Sept. 12, 2024
- Marla, in chat response to “Is there a flat rate for providing data to Reclaim?” Reclaim, Sept. 11, 2024
- Marla, in chat response to “Is there a maximum number of points a person can earn in a day or month?” Reclaim, Sept. 11, 2024

Bates Numbered Documents on Following Page

## Appendix 2: Materials Considered

Bates Documents		
GRIFFITHTT000280	TIKTOK-BG-000008145	TIKTOK-BG-000167023
GRIFFITHTT002083	TIKTOK-BG-000008221	TIKTOK-BG-000167674
GRIFFITHTT002097	TIKTOK-BG-000008249	TIKTOK-BG-000168217
GRIFFITHTT002098	TIKTOK-BG-000008259	TIKTOK-BG-000168885
GRIFFITHTT002099	TIKTOK-BG-000008271	TIKTOK-BG-000172400
GRIFFITHTT002107	TIKTOK-BG-000008272	TIKTOK-BG-000172448
GRIFFITHTT002117	TIKTOK-BG-000008273	TIKTOK-BG-000172498
GRIFFITHTT002118	TIKTOK-BG-000008274	TIKTOK-BG-000174607
GRIFFITHTT002119	TIKTOK-BG-000008555	TIKTOK-BG-000174705
GRIFFITHTT002120	TIKTOK-BG-000008616	TIKTOK-BG-000174758
GRIFFITHTT002121	TIKTOK-BG-000008728	TIKTOK-BG-000174827
GRIFFITHTT002122	TIKTOK-BG-000008776	TIKTOK-BG-000174909
GRIFFITHTT002123	TIKTOK-BG-000008784	TIKTOK-BG-000174995
GRIFFITHTT002124	TIKTOK-BG-000008838	TIKTOK-BG-000175134
GRIFFITHTT002125	TIKTOK-BG-000008894	TIKTOK-BG-000175140
GRIFFITHTT002196	TIKTOK-BG-000008906	TIKTOK-BG-000175204
SHIH-GRIFFITHTT000042	TIKTOK-BG-000008957	TIKTOK-BG-000175231
SHIH-GRIFFITHTT000064	TIKTOK-BG-000009000	TIKTOK-BG-000175262
SHIH-GRIFFITHTT000067	TIKTOK-BG-000009006	TIKTOK-BG-000175591
SHIH-GRIFFITHTT000071	TIKTOK-BG-000009035	TIKTOK-BG-000178616
SHIH-GRIFFITHTT000137	TIKTOK-BG-000009063	TIKTOK-BG-000178847
SHIH-GRIFFITHTT000152	TIKTOK-BG-000009096	TIKTOK-BG-000179397
SHIH-GRIFFITHTT000154	TIKTOK-BG-000009104	TIKTOK-BG-000185238
SHIH-GRIFFITHTT000155	TIKTOK-BG-000009140	TIKTOK-BG-000213263
SHIH-GRIFFITHTT000170	TIKTOK-BG-000009224	TIKTOK-BG-000213276
SHIH-GRIFFITHTT000184	TIKTOK-BG-000009259	TIKTOK-BG-000213277
SHIH-GRIFFITHTT000185	TIKTOK-BG-000009320	TIKTOK-BG-000213278
TIKTOK-BG-000000245	TIKTOK-BG-000009810	TIKTOK-BG-000213279
TIKTOK-BG-000000811	TIKTOK-BG-000009835	TIKTOK-BG-000213280
TIKTOK-BG-000000835	TIKTOK-BG-000009847	TIKTOK-BG-000213281
TIKTOK-BG-000000948	TIKTOK-BG-000009897	TIKTOK-BG-000213282
TIKTOK-BG-000001068	TIKTOK-BG-000009921	TIKTOK-BG-000213283
TIKTOK-BG-000001083	TIKTOK-BG-000010031	TIKTOK-BG-000213284
TIKTOK-BG-000001335	TIKTOK-BG-000010033	TIKTOK-BG-000213285
TIKTOK-BG-000001568	TIKTOK-BG-000010132	TIKTOK-BG-000213286
TIKTOK-BG-000001576	TIKTOK-BG-000010142	TIKTOK-BG-000213287
TIKTOK-BG-000001641	TIKTOK-BG-000011404	TIKTOK-BG-000213288
TIKTOK-BG-000001909	TIKTOK-BG-000024315	TIKTOK-BG-000213289
TIKTOK-BG-000002001	TIKTOK-BG-000039859	TIKTOK-BG-000213290
TIKTOK-BG-000002112	TIKTOK-BG-000039862	TIKTOK-BG-000213291
TIKTOK-BG-000002185	TIKTOK-BG-000039913	TIKTOK-BG-000213292

## Appendix 2: Materials Considered

TIKTOK-BG-000002238	TIKTOK-BG-000039923	TIKTOK-BG-000217358
TIKTOK-BG-000002273	TIKTOK-BG-000045033	TIKTOK-BG-000218766
TIKTOK-BG-000002298	TIKTOK-BG-000045126	TIKTOK-BG-000218769
TIKTOK-BG-000002311	TIKTOK-BG-000045153	TIKTOK-BG-000275139
TIKTOK-BG-000002338	TIKTOK-BG-000045187	TIKTOK-BG-000284289
TIKTOK-BG-000002434	TIKTOK-BG-000045354	TIKTOK-BG-000284297
TIKTOK-BG-000002534	TIKTOK-BG-000045726	TIKTOK-BG-000284330
TIKTOK-BG-000002547	TIKTOK-BG-000045729	TIKTOK-BG-000285298
TIKTOK-BG-000002631	TIKTOK-BG-000045798	TIKTOK-BG-000285337
TIKTOK-BG-000002632	TIKTOK-BG-000046648	TIKTOK-BG-000285867
TIKTOK-BG-000002638	TIKTOK-BG-000047647	TIKTOK-BG-000286082
TIKTOK-BG-000002716	TIKTOK-BG-000047687	TIKTOK-BG-000287457
TIKTOK-BG-000002788	TIKTOK-BG-000048179	TIKTOK-BG-000289903
TIKTOK-BG-000002789	TIKTOK-BG-000049598	TIKTOK-BG-000657312
TIKTOK-BG-000002790	TIKTOK-BG-000082806	TIKTOK-BG-000659118
TIKTOK-BG-000002791	TIKTOK-BG-000083171	TIKTOK-BG-000662944
TIKTOK-BG-000002792	TIKTOK-BG-000086923	TIKTOK-BG-000663406
TIKTOK-BG-000002793	TIKTOK-BG-000109500	TIKTOK-BG-000711656
TIKTOK-BG-000002883	TIKTOK-BG-000110011	TIKTOK-BG-000736841
TIKTOK-BG-000002918	TIKTOK-BG-000112193	TIKTOK-BG-000746141
TIKTOK-BG-000002930	TIKTOK-BG-000112207	TIKTOK-BG-000746271
TIKTOK-BG-000002941	TIKTOK-BG-000113341	TIKTOK-BG-003048685
TIKTOK-BG-000003014	TIKTOK-BG-000117752	WATTERS-GRIFFITHTT000004
TIKTOK-BG-000003042	TIKTOK-BG-000118043	WATTERS-GRIFFITHTT000011
TIKTOK-BG-000003045	TIKTOK-BG-000118672	WATTERS-GRIFFITHTT000023
TIKTOK-BG-000003067	TIKTOK-BG-000124015	WATTERS-GRIFFITHTT000128
TIKTOK-BG-000003082	TIKTOK-BG-000124016	WATTERS-GRIFFITHTT000136
TIKTOK-BG-000003098	TIKTOK-BG-000124017	WATTERS-GRIFFITHTT000138
TIKTOK-BG-000003100	TIKTOK-BG-000124022	WATTERS-GRIFFITHTT000139
TIKTOK-BG-000003122	TIKTOK-BG-000125306	WATTERS-GRIFFITHTT000141
TIKTOK-BG-000003172	TIKTOK-BG-000125693	WATTERS-GRIFFITHTT000143
TIKTOK-BG-000003193	TIKTOK-BG-000131418	WATTERS-GRIFFITHTT000145
TIKTOK-BG-000003340	TIKTOK-BG-000131440	WATTERS-GRIFFITHTT000153
TIKTOK-BG-000005364	TIKTOK-BG-000131653	WATTERS-GRIFFITHTT000189
TIKTOK-BG-000005393	TIKTOK-BG-000146624	WATTERS-GRIFFITHTT000198
TIKTOK-BG-000007821	TIKTOK-BG-000151723	WATTERS-GRIFFITHTT000259
TIKTOK-BG-000007829	TIKTOK-BG-000151746	WATTERS-GRIFFITHTT000260
TIKTOK-BG-000007830	TIKTOK-BG-000151773	WATTERS-GRIFFITHTT000261
TIKTOK-BG-000007849	TIKTOK-BG-000151777	WATTERS-GRIFFITHTT000472
TIKTOK-BG-000007908	TIKTOK-BG-000151778	WATTERS-GRIFFITHTT000536
TIKTOK-BG-000008008	TIKTOK-BG-000157229	WATTERS-GRIFFITHTT000601
TIKTOK-BG-000008020	TIKTOK-BG-000158129	WATTERS-GRIFFITHTT000610



## **Appendix 2: Materials Considered**

TIKTOK-BG-000008030

TIKTOK-BG-000158808

WATTERS-GRIFFITHTT000611

TIKTOK-BG-000008052

TIKTOK-BG-000160822

WATTERS-GRIFFITHTT000612

TIKTOK-BG-000008071

### **Appendix 3: Backup Figures**



**Backup Figure 5.1: Global and U.S. Revenues for the Relevant Period (High and Low Approaches)**

Approach	Source Revenue [1]	Days Measured	Daily Value [1]	Days in Relevant Period	Relevant Period Revenues (Global) [2]	Relevant Period Revenues (U.S.) [3]

Sources:

TIKTOK-BG-000175591; TIKTOK-BG-000125306

Notes:

[1] Daily Value = Source Revenue ÷ Days Measured.

[2] Relevant Period Revenues (Global) = Daily Value × Days in Relevant Period.

[3] Relevant Period Revenues (U.S.) = Relevant Period Revenues (Global) × 0.13.

### Backup Figure 5.2: Global and U.S. Revenues for the Relevant Period (Average Approach)

	Daily Value	Days in Relevant Period	Relevant Period Revenues (Global) [1]	Relevant Period Revenues (U.S.) [2]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]

### Sources:

TIKTOK-BG-000175591; TIKTOK-BG-000125306

Notes:

[1] Relevant Period Revenues (Global) = Daily Value  $\times$  Days in Relevant Period.

[2] Relevant Period Revenues (U.S.) = Relevant Period Revenues (Global)  $\times 0.13$ .

**Backup Figure 6.1: Meta Gross Margin (2010–2012)**

	2010	2011	2012
Revenue	1,974	3,711	5,089
Costs and expenses:			
Cost of revenue	493	860	1,364
Research and development	144	388	1,399
Marketing and sales	167	393	896
General and administrative	138	314	892
Total costs and expenses	942	1,955	4,551
Income from operations	1,032	1,756	538
Interest and other income (expense), net	(24)	(61)	(44)
Income before provision for income taxes	1,008	1,695	494
Provision for income taxes	402	695	441
Net income	606	1,000	53
Gross Margin	75%	77%	73%
<b>Weighted Average Gross Margin (2010–2012):</b>	<b>75%</b>		

Sources:

Facebook, Inc., Annual Report (Form 10-K) (Feb. 1, 2013), p. 45.

Notes:

Values in millions.

Gross Margin = (Revenue – Cost of Revenue) ÷ Revenue

**Backup Figure 6.2: Twitter Gross Margin (2013–2015)**

	2013	2014	2015
Revenue	664,890	1,403,002	2,218,032
Costs and expenses:			
Cost of revenue	266,718	446,309	729,256
Research and development	593,992	691,543	806,648
Sales and marketing	316,216	614,110	871,491
General and administrative	123,795	189,906	260,673
Total costs and expenses	1,300,721	1,941,868	2,668,068
Loss from operations	(635831)	(538866)	(450036)
Interest expense	(7576)	(35918)	(98178)
Other income (expense), net	(3739)	(3567)	14909
Loss before income taxes	(647146)	(578351)	(533305)
Provision (benefit) for income taxes	(1823)	(531)	(12274)
Net loss	(645323)	(577820)	(521031)
Deemed dividend to investors in relation to the tender offer	—	—	—
Net loss attributable to common stockholders	(645323)	(577820)	(521031)
Net loss per share attributable to common stockholders:			
Basic and diluted	(3)	(1)	(1)
Weighted-average shares used to compute net loss per share attributable to common stockholders:			
Basic and diluted	189510	604990	662424
Other Financial Information:(2)			
Adjusted EBITDA	75430	300896	557807
Non-GAAP net income (loss)	(34330)	101071	276629
Gross Margin	60%	68%	67%
<b>Weighted Average Gross Margin (2013–2015):</b>	<b>66%</b>		

Sources:

Twitter, Inc., Annual Report (Form 10-K) (Feb. 29, 2016), p. 39.

Notes:

Values in thousands.

Gross Margin = (Revenue – Cost of Revenue) ÷ Revenue.

**Backup Figure 6.3: Google Gross Margin (2003–2005)**

	2003	2004	2005
Revenues	1,465,934	3,189,223	6,138,560
Costs and expenses:			
Cost of revenues	634,411	1,468,967	2,577,088
Research and development	229,605	395,164	599,510
Sales and marketing	164,935	295,749	468,152
General and administrative	94,519	188,151	386,532
Contribution to Google Foundation	—	—	90,000
Non-recurring portion of settlement of disputes with Yahoo	—	201,000	—
Total costs and expenses	1,123,470	2,549,031	4,121,282
Income from operations	342,464	640,192	2,017,278
Interest income and other, net	4,190	10,042	124,399
Income before income taxes	346,654	650,234	2,141,677
Provision for income taxes	241,006	251,115	676,280
Net income	105,648	399,119	1,465,397
Net income per share of Class A and Class B common stock			
Basic	0.77	2.07	5.31
Diluted	0.41	1.46	5.02
Gross Margin	57%	54%	58%
<b>Weighted Average Gross Margin (2003–2005):</b>	<b>57%</b>		

Sources:

Google Inc., Annual Report (Form 10-K) (Mar. 16, 2006), p. 41.

Notes:

Values in thousands.

Gross Margin is: (Revenue – Cost of Revenue) ÷ Revenue.

**Backup Figure 6.4: Snap Gross Margin (2018–2020)**

	2018	2019	2020
Revenue	1,180,446	1,715,534	2,506,626
Costs and expenses:			
Cost of revenue	798,865	895,838	1,182,505
Research and development	772,185	883,509	1,101,561
Sales and marketing	400,824	458,598	555,468
General and administrative	477,022	580,917	529,164
Total costs and expenses	2,448,896	2,818,862	3,368,698
Operating loss	(1,268,450)	(1,103,328)	(862,072)
Interest income	27,228	36,042	18,127
Interest expense	(3,894)	(24,994)	(97,228)
Other income (expense), net	(8,248)	59,013	14,988
Loss before income taxes	(1,253,364)	(1,033,267)	(926,185)
Income tax benefit (expense)	(2,547)	(393)	(18,654)
Net loss	(1,255,911)	(1,033,660)	(944,839)
Net loss per share attributable to Class A, Class B, and Class C common stockholders			
Basic	(0.97)	(0.75)	(0.65)
Diluted	(0.97)	(0.75)	(0.65)
Gross Margin	32%	48%	53%
<b>Weighted Average Gross Margin (2018–2020):</b>	<b>47%</b>		

Sources:

Snap Inc., Annual Report (Form 10-K) (Feb. 5, 2021), p. 43.

Notes:

Values in thousands.

Gross Margin is: (Revenue – Cost of Revenue) ÷ Revenue.